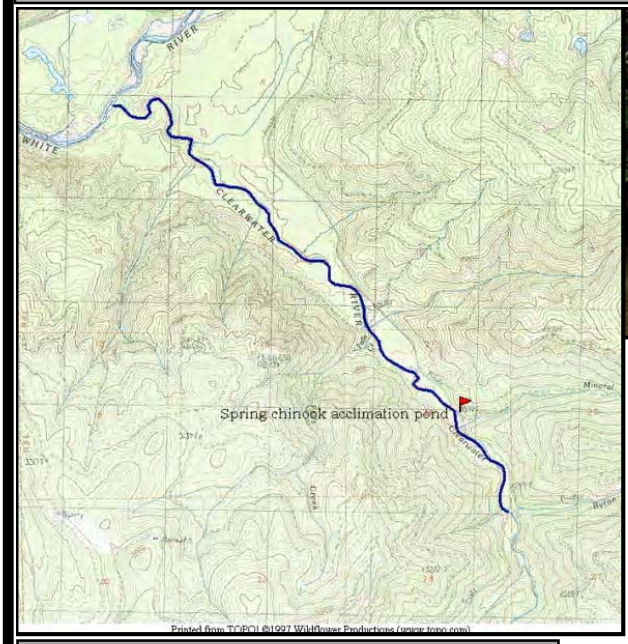
# CLEARWATER RIVER

**WRIA: 10.0080 - WHITE RIVER** **2004 - 2005**

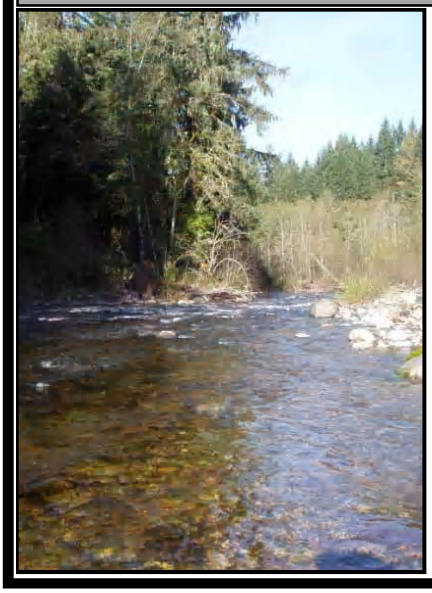



**The 3.8 mile survey reach of the Clearwater river contains several deep resting pools.**

**River miles surveyed:** 0.0 to 3.8
**Dates surveyed:** 8/18/04 to 6/20/05
**Species surveyed:** Chinook, Coho, Pink, Steelhead

**Access**

**Mile 3.8:** Continue on 6000 road to Clearwater bridge near 6015 road.
**Mile 2.2:** Follow 6000 road to 6050 road.
**Mile 1.0:** Take Hwy. 410 and turn right on Bridge Camp Road about ten miles east of Enumclaw. Turn right on 6000 road and cross the White River. Turn right on 6013 road.

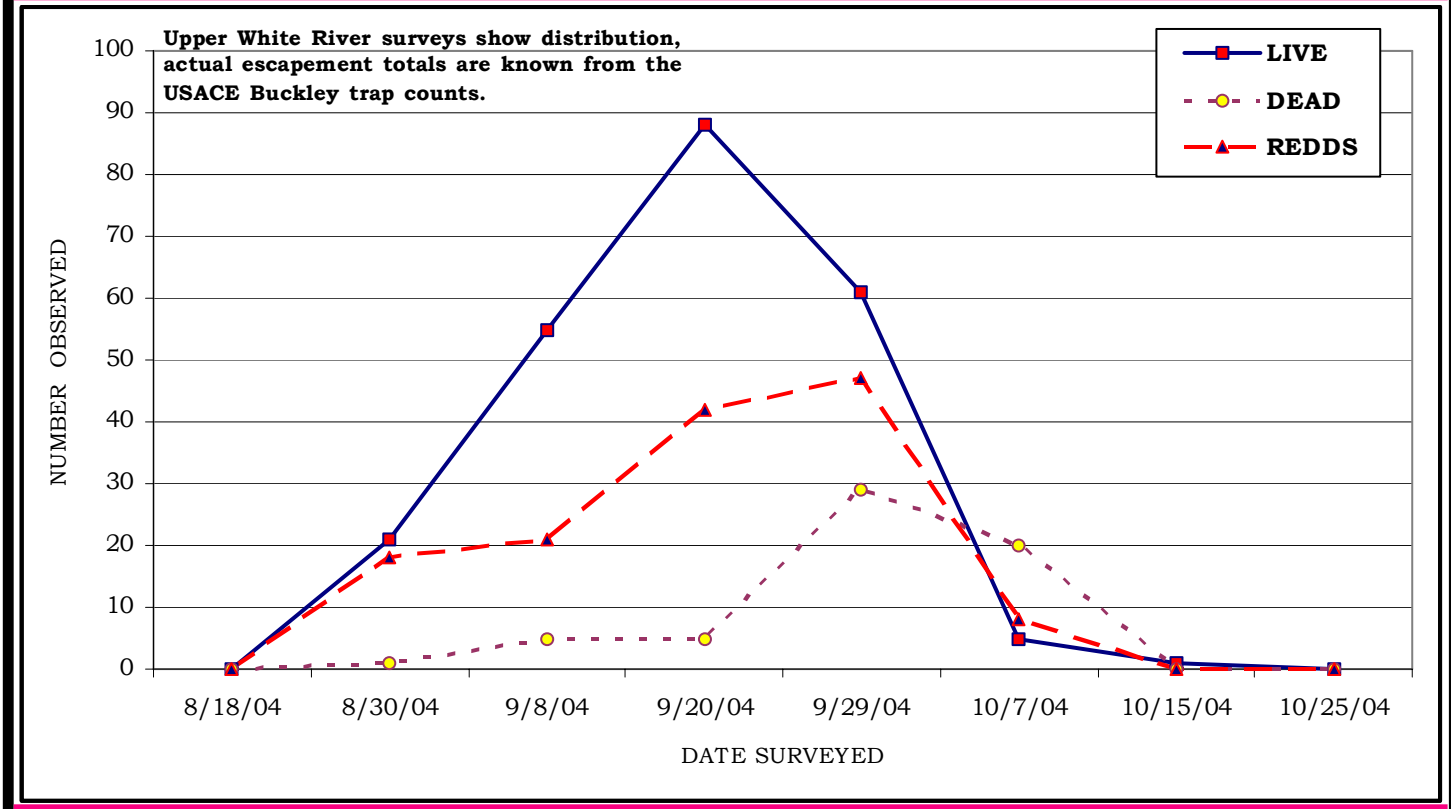


## DESCRIPTION

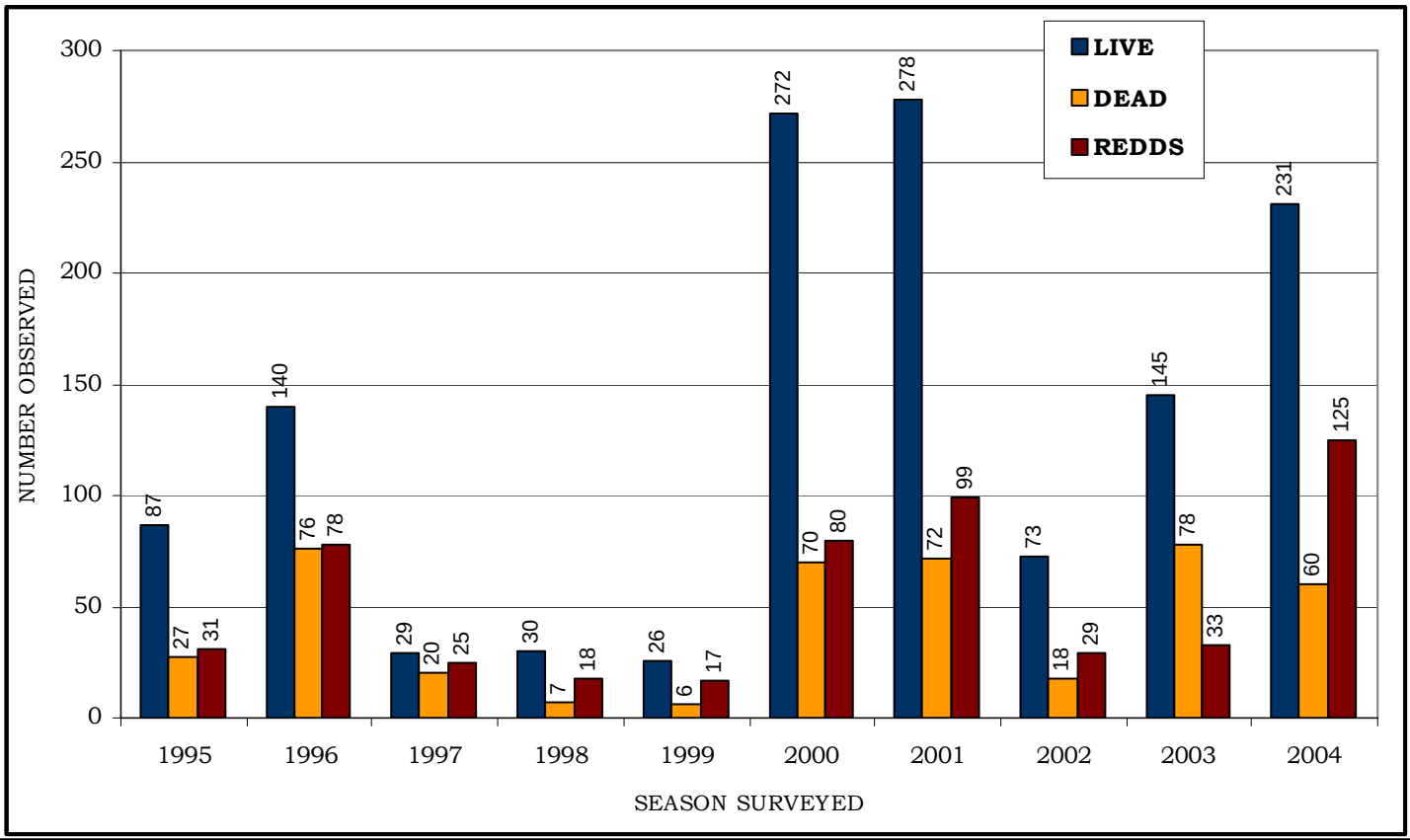
The Clearwater River is a large tributary to the Upper White River. The Clearwater originates on Bear Head Mountain and is non-glacial. From Bear Head Mountain, the river flows just over 10.5 miles to its confluence with the White River at RM 35.3. The upper 5 miles of the river flows through the Snoqualmie National Forest. The lower 5.8 miles of the Clearwater flows through the White River tree farm, where timber harvesting and confinement by logging roads has affected the rivers natural morphology. Despite these shortcomings, the Clearwater River continues to support a substantial number of spawners. The substrate throughout much of the river consists of cobbles and flat angular stone, with smaller gravel in the many riffles and tail-outs. The riparian area is primarily second growth conifer forest in the lower river with recent clear cutting evident along portions of the upper and lower survey reach. The Clearwater host several tributaries including; Falls creek, Mineral, Byron, Lyle and Milky creeks. Limited amounts of LWD are present in the channel, and much of what is present is undersized or hardwood in origin. There are a series of cascades just above Lyle creek, at approximately RM 4.5, that may block further upstream migration. Much of the spawning takes place in the lower 2 miles of the river, although fish and redds are often observed and documented in the upper reaches later in the season.

All adult salmon and steelhead that spawn in the Clearwater River were captured at the USACE fish trap in Buckley (see pg. 5), and transported above Mud Mountain dam. Since precise escapement numbers for the upper White River drainage are known, surveys are conducted to determine fish distribution and spawning success. This is especially important regarding spring chinook, since adult production monitoring is part of the White River spring chinook recovery plan. Also, as part of the recovery plan, the Puyallup tribe operates a spring chinook acclimation pond located at RM 3.2. Approximately 200,000 plus Spring chinook from the Muckleshoot White River hatchery are transported to the Clearwater pond in early spring. Surveys for coho were conducted for the first time in 2002.

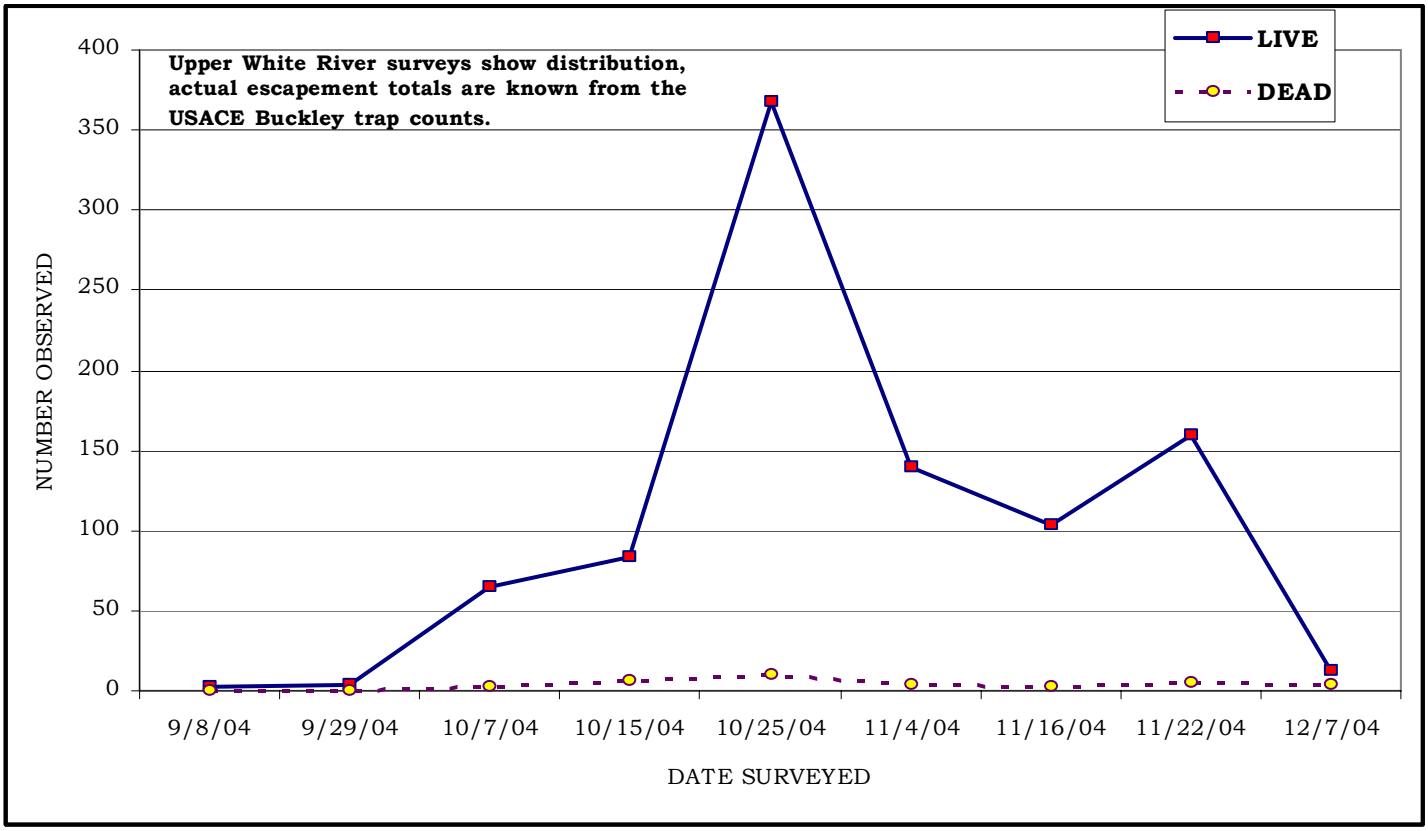
# 2004 CLEARWATER RIVER CHINOOK COUNTS



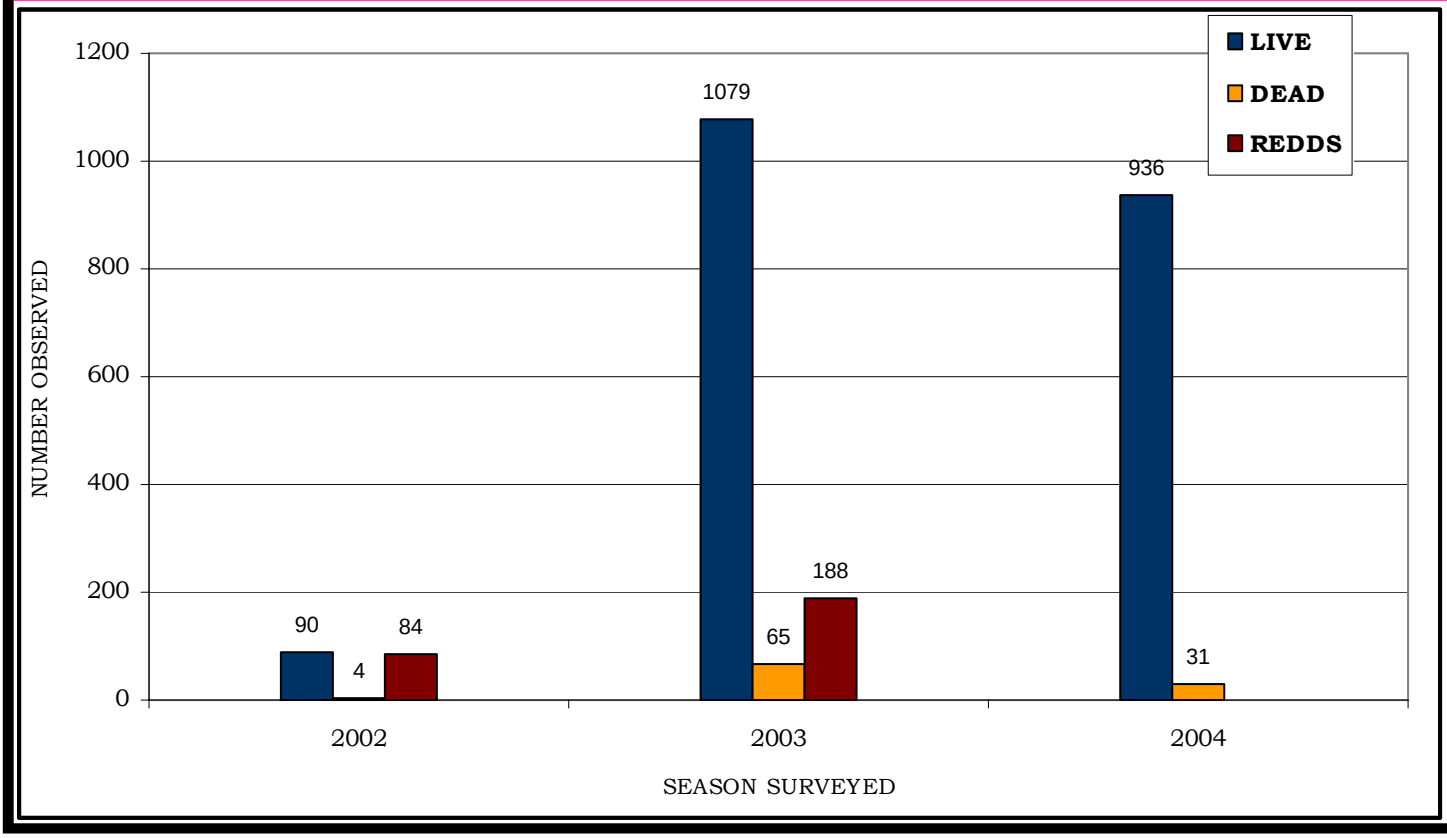

# CLEARWATER RIVER CHINOOK SEASON COMPARISONS (1995 - 2004)



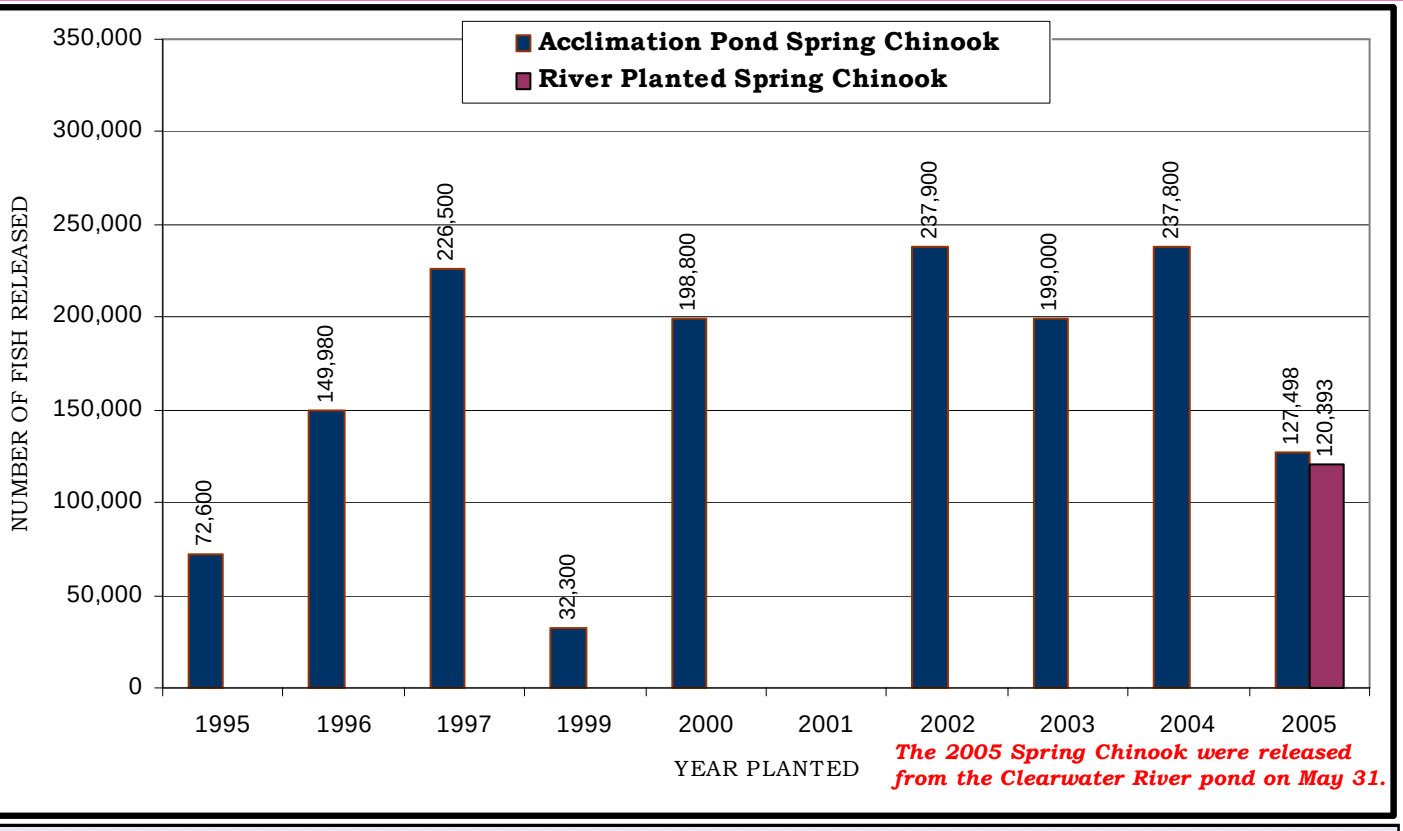
# 2004 CLEARWATER RIVER COHO COUNTS




# CLEARWATER RIVER COHO SEASON COMPARISONS (2002 - 2004)

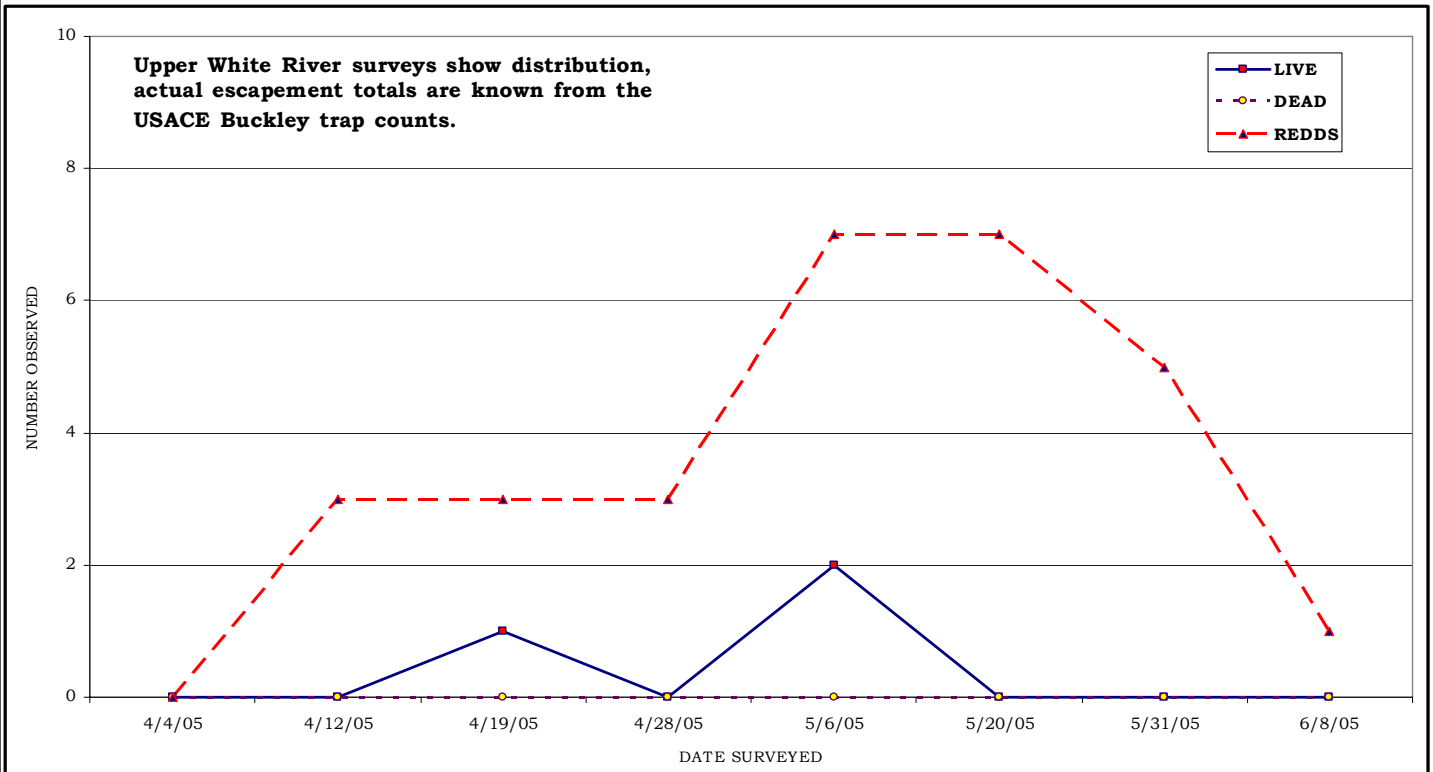


# CLEARWATER RIVER SPRING CHINOOK ACCLIMATION POND PLANTS (1995 - 2005)

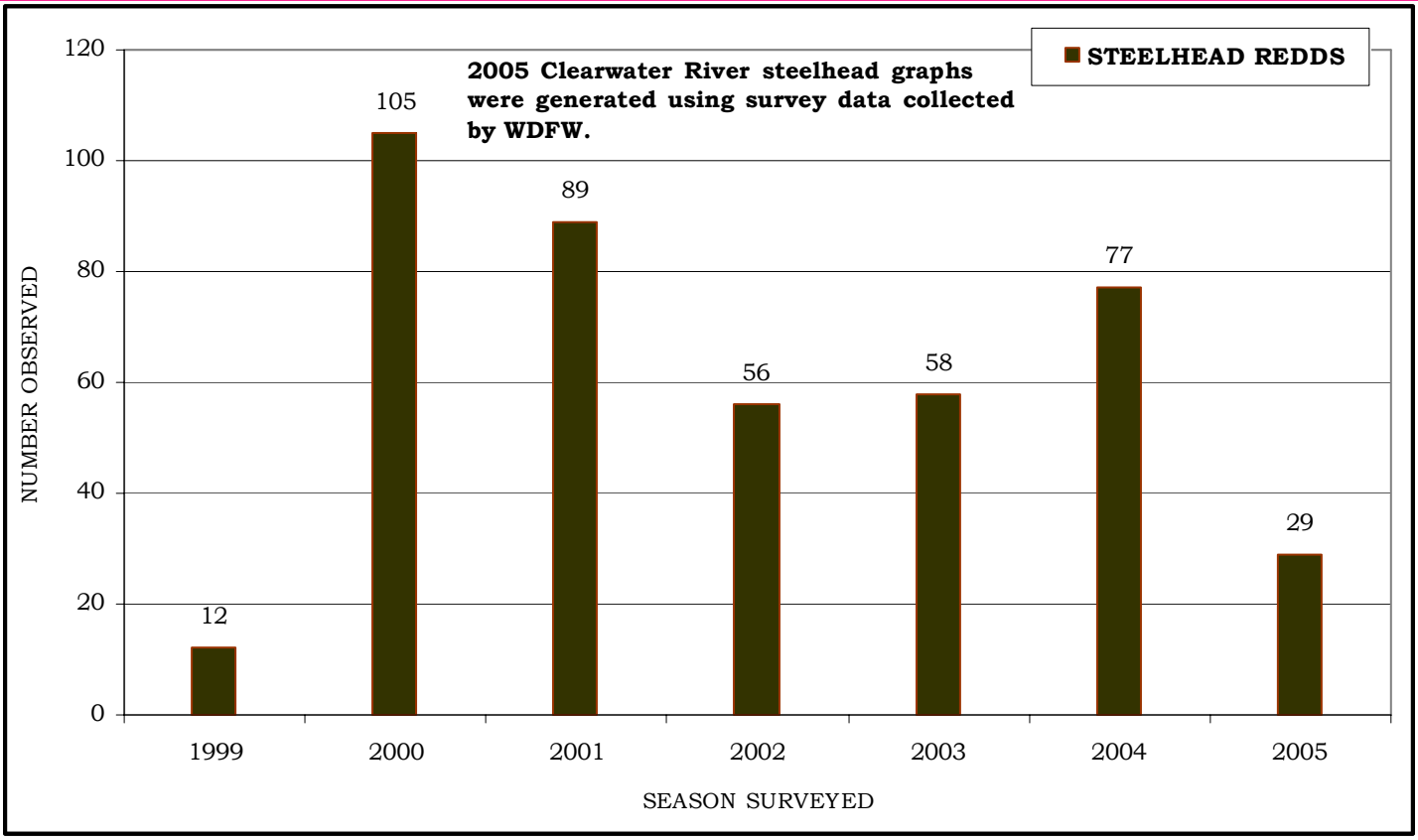



**Approximately 200,000 plus Spring chinook from the Muckleshoot White River hatchery are transported to the Clearwater River acclimation pond in early Spring, and released in late Spring. All fish are mass marked with left or right ventral fin clips. Odd brood years are marked with left ventral clips, and even years with right ventral clips. These fish can later be identified when caught at the USACE fish trap in Buckley and passed above the Mud Mountain dam to spawn.**

# 2005 CLEARWATER RIVER STEELHEAD COUNTS

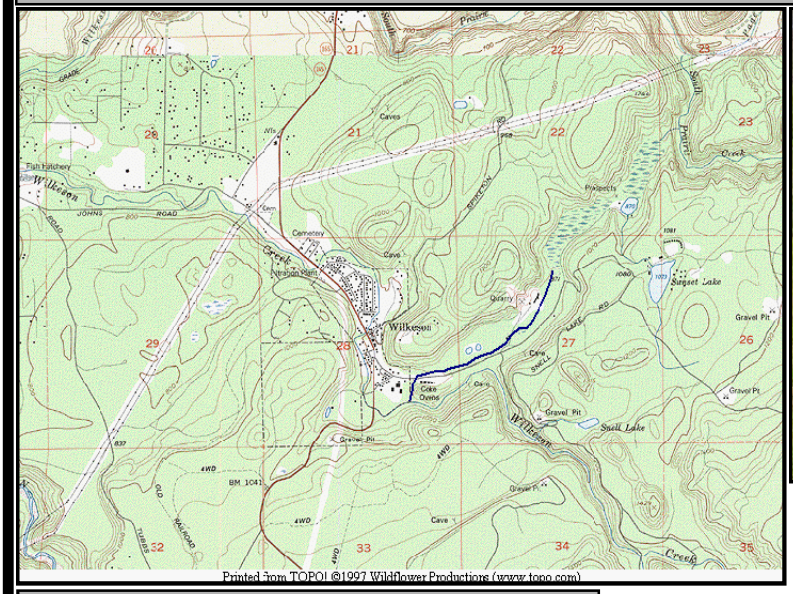



# CLEARWATER RIVER STEELHEAD REDDS SEASON COMPARISONS (1999 - 2005)



# COAL MINE CREEK

**WRIA: 10.0432A - CARBON RIVER** **2004 - 2005**




**River miles surveyed:** 0.0 to 0.6
**Dates surveyed:** 10/14/04 to 2/24/05
**Species surveyed:** Coho
**Access**
**Mile 0.15:** Take Hwy. 165 South to the town of Wilkeson. Continue through the Wilkeson until you reach Railroad Ave., and turn left onto Railroad Ave. Railroad Ave. crosses Coal Mine creek approximatly 0.2 miles down the road just past the school.

## DESCRIPTION

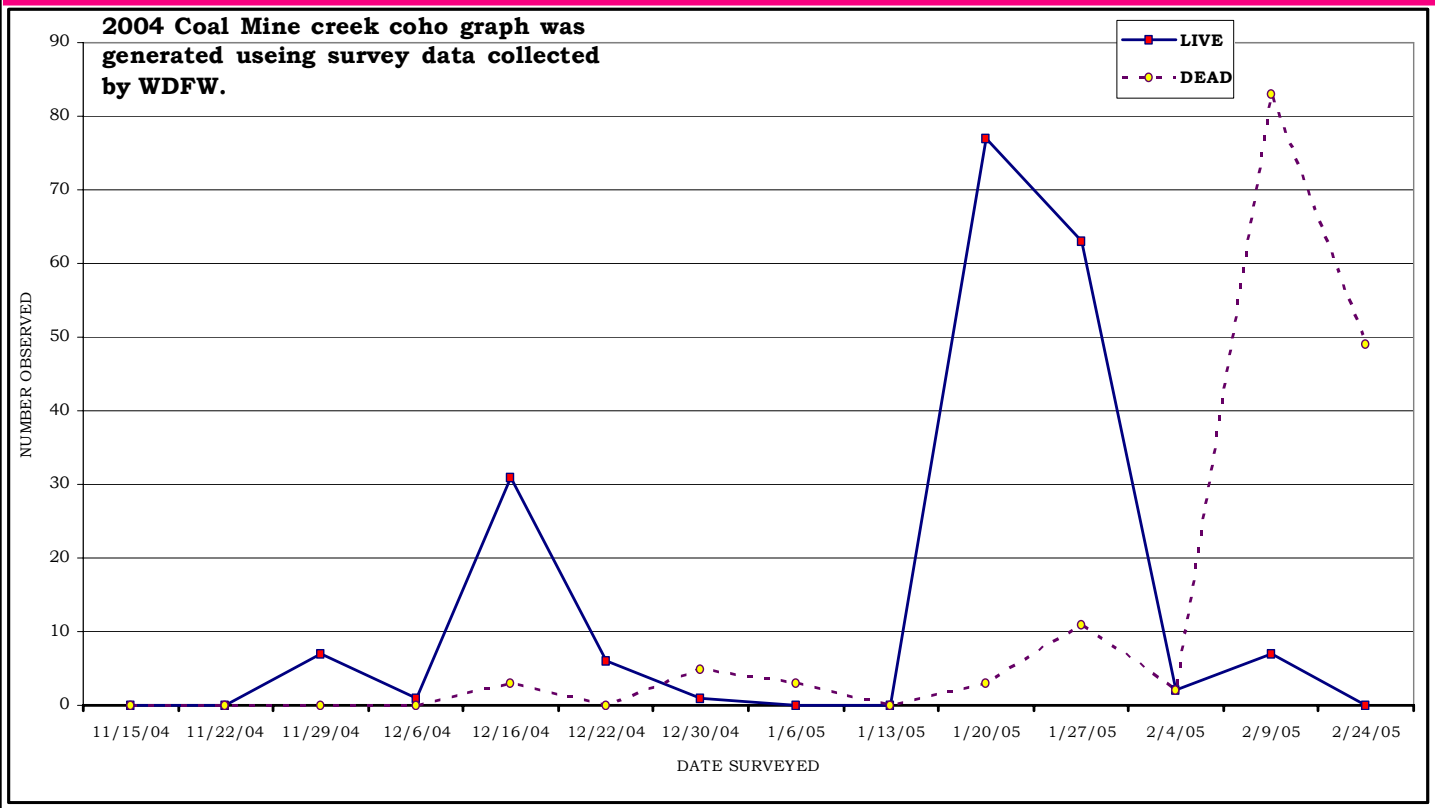
Coal Mine creek is a small tributary to upper Wilkeson creek (pg. 124), entering Wilkeson creek in the town of Wilkeson near RM 5.7. Wilkeson in turn is a tributary to South Prairie Creek. Coal Mine creek is one of 5 index streams in the Puyallup watershed that are surveyed for coho by the Washington Department of Fish and Wildlife. Neither chinook or steelhead are present in the stream, yet occasionally chum are observed.

**Spawning opportunities are reduced dramatically downstream of the culvert crossing at Railroad Ave. due to a narrow confined channel and lack of suitable spawning gravel.**

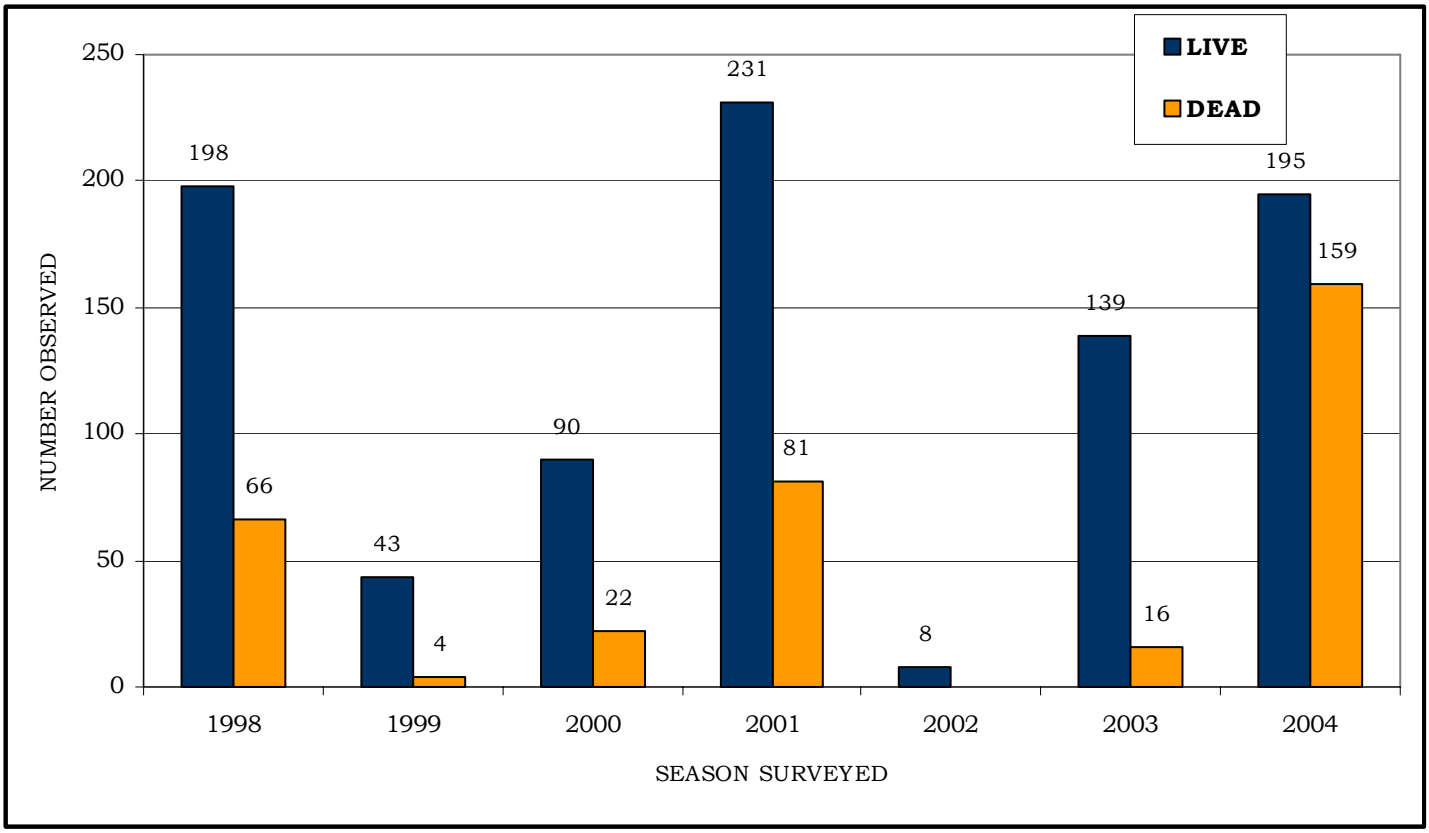
Coal Mine is a small stream with moderately low gradient, inadequate riparian cover, little or no woody debris and minimal natural bank protection, yet the creek does provides some suitable spawning habitat for coho and chum. Moderate amounts of development exist along the lower section of the creek, consisting primarily of private family homes, public and private roads, as well as a rock quarry and public school. The creek flows through a fish passable cement box culvert (below) approximately 0.15 miles up from the mouth, and a second culvert near RM 0.6. Some complexity has been added to the creek via small restoration projects such as the placement of sill logs, root wads, boulders and small trees (top photo). Spawning opportunities are reduced dramatically downstream of the culvert crossing at Railroad Ave. due to a narrow confined channel and lack of suitable spawning gravel. Most of the substrate through this section consists of fine silt, sand, and exceedingly small patches of undersized gravel, however, relatively abundant spawning gravel exists above the culvert. Nevertheless, several silty deposits exist throughout the entire surveyed section. The rock and gravel quarry site located near the creek is one of the suspected sources of the silt.

**Coal Mine creek looking downstream at the box culvert crossing for Railroad Ave.**

# 2004 COAL MINE CREEK COHO COUNTS

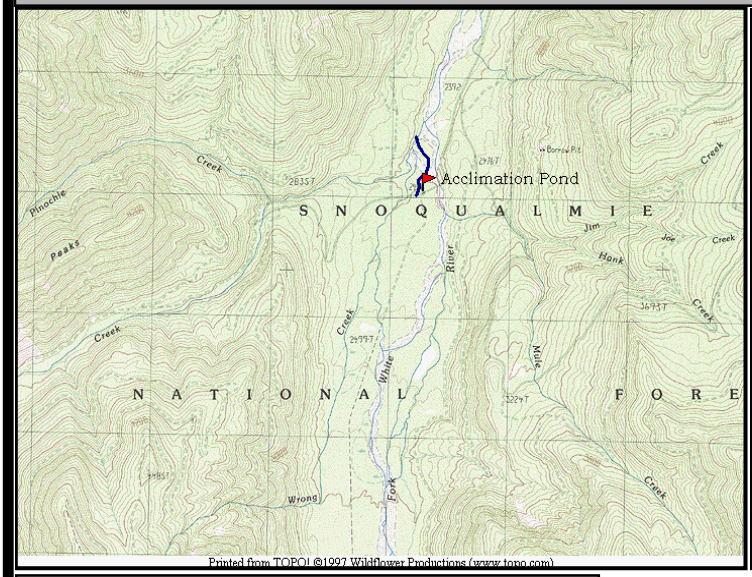


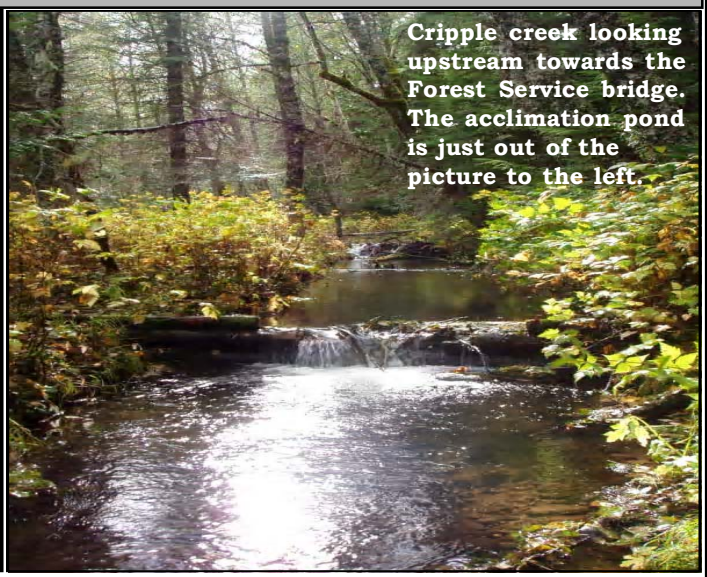

# COAL MINE CREEK COHO SEASON COMPARISONS (1998 - 2004)



# CRIPPLE CREEK

**WRIA: 10.0086 - WHITE RIVER** **2004 - 2005**





Cripple creek looking upstream towards the Forest Service bridge. The acclimation pond is just out of the picture to the left.

**River miles surveyed:** 0.0 to 0.3
**Dates surveyed:** 8/17/04 to 11/19/04
**Species surveyed:** Chinook (N/O)
Coho

**Access**

**Mile 0.3:** Follow Forest Service road 74 Off of Hwy 410 until the bridge over the West Fork White river is reached. A short distance further is the Wrong creek bridge. Approximately 100 yards East of the Wrong creek bridge Cripple creek flows through a culvert under the road.

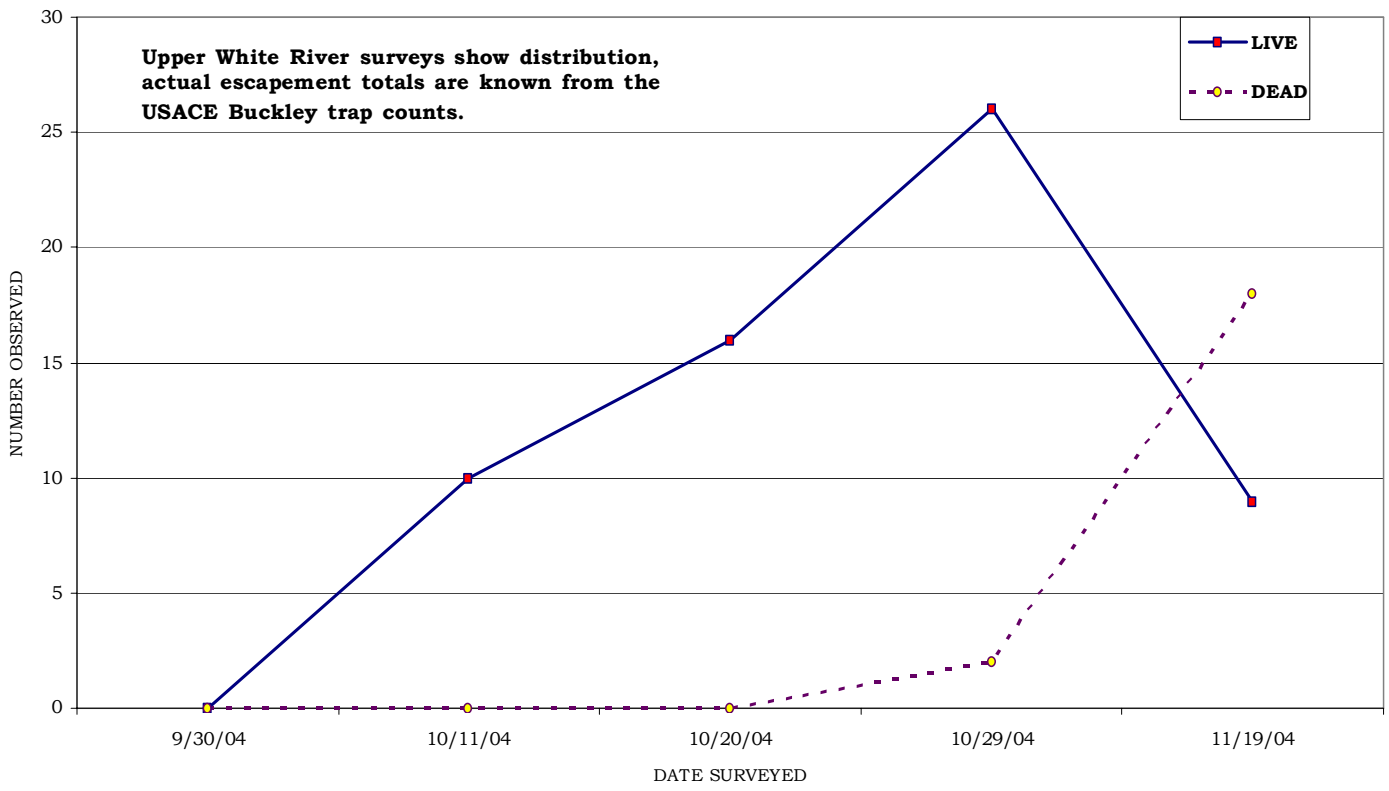
## DESCRIPTION

The 0.3 mile surveyed reach of Cripple creek flows within the West Fork White River flood plain. There is a moderate amount of stream complexity created by a few placed pieces of LWD and stream sinuosity. The creek quickly joins Pinochle creek approximately 0.5 miles above its confluence with the West Fork White River. Cripple creek flows through a low gradient pool riffle channel with generally thick, brushy riparian cover. A large beaver dam often blocks the culvert under the Forest service bridge preventing adult upstream migration. The blockage has been removed several times by the USFS, only to be rebuilt in a short period. Coho are often observed spawning right up to the blocked culvert. Low flows often prevent chinook from spawning in the creek. The substrate contains a large amount of fine materials, but several small patches of suitable spawning gravel exist throughout the entire reach.

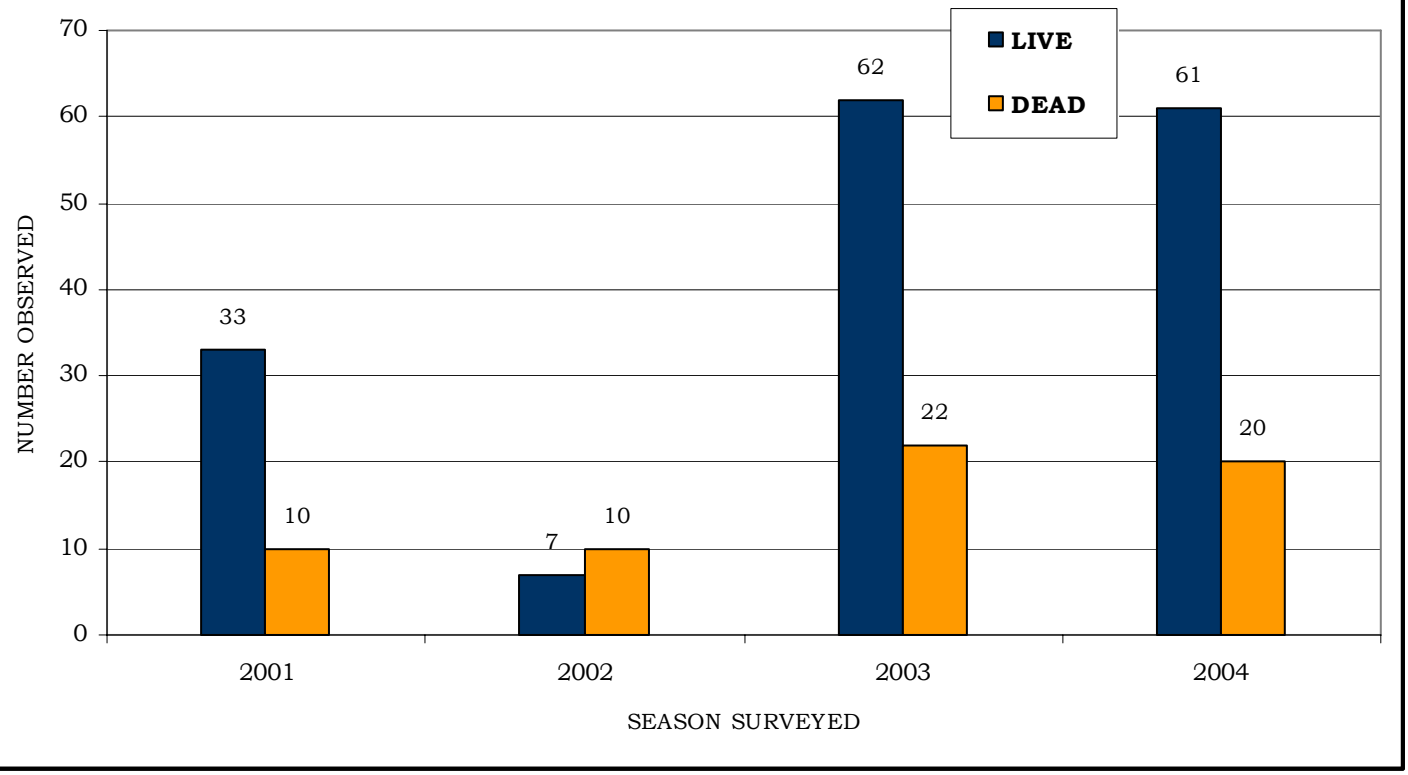
All adult salmon that spawn in Cripple creek were captured at the USACE fish trap in Buckley (see pg. 5), and transported above Mud Mountain dam. Since precise escapement numbers for the upper White River drainage are known, surveys are conducted to determine fish distribution and spawning success. This is especially important regarding spring chinook, since adult production monitoring is part of the White River spring chinook recovery plan. Also, as part of the recovery plan, the Puyallup tribe operates a spring chinook acclimation pond located at RM 0.3. Spring chinook have been reared and released from Cripple creek for several years. Approximately 50,000 plus spring chinook from the Muckleshoot White River hatchery are transported to the Cripple creek acclimation pond in early Spring, and released in late Spring. Returns to this small stream, as well as Pinochle and Wrong creeks, are likely the result of these earlier plantings.


Winter stream conditions during a cripple creek coho survey.

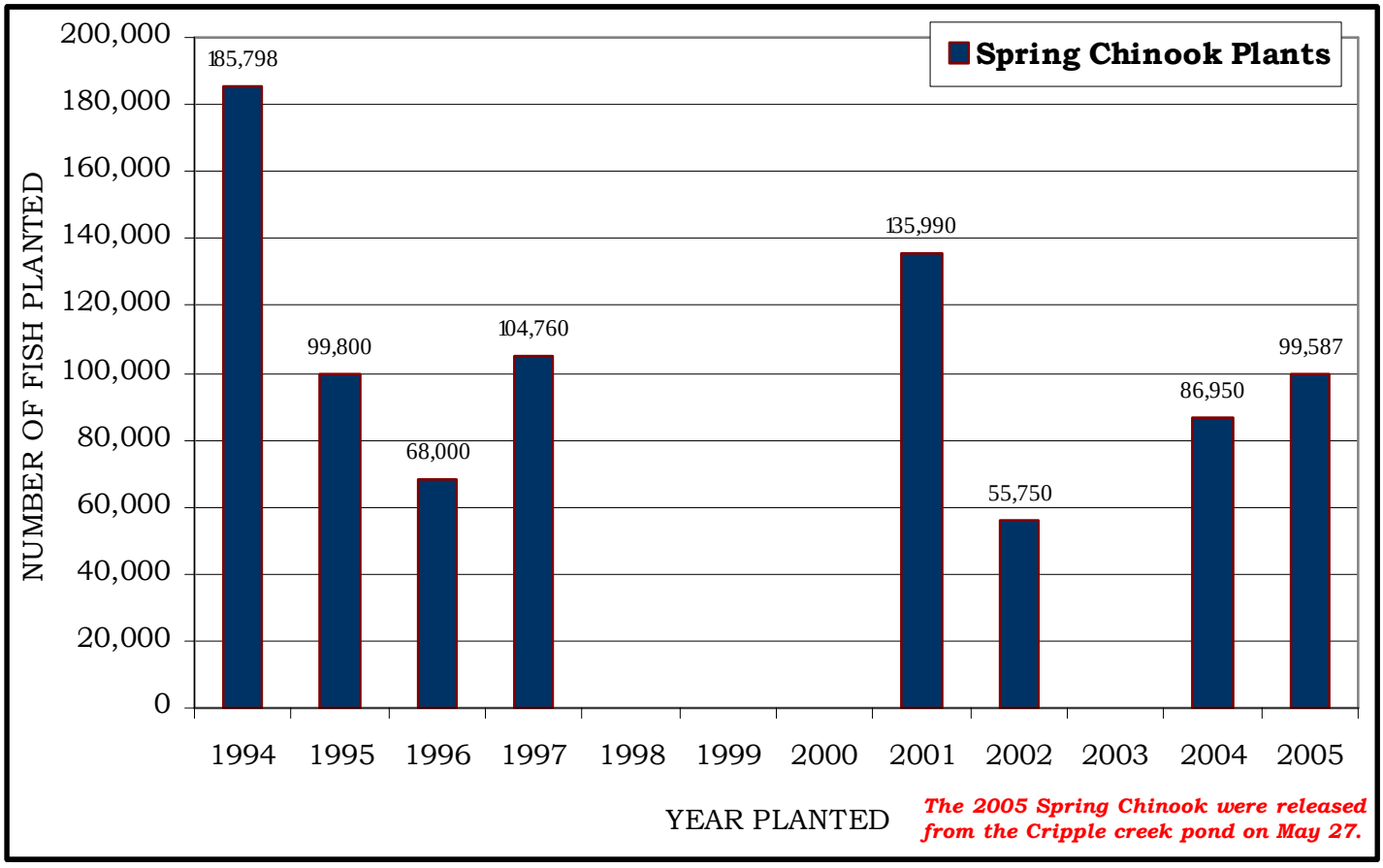
# 2004 CRIPPLE CREEK COHO COUNTS




# CRIPPLE CREEK COHO SEASON COMPARISONS (2000 - 2004)



# CRIPPLE CREEK SPRING CHINOOK ACCLIMATION POND PLANTS (1994 - 2005)

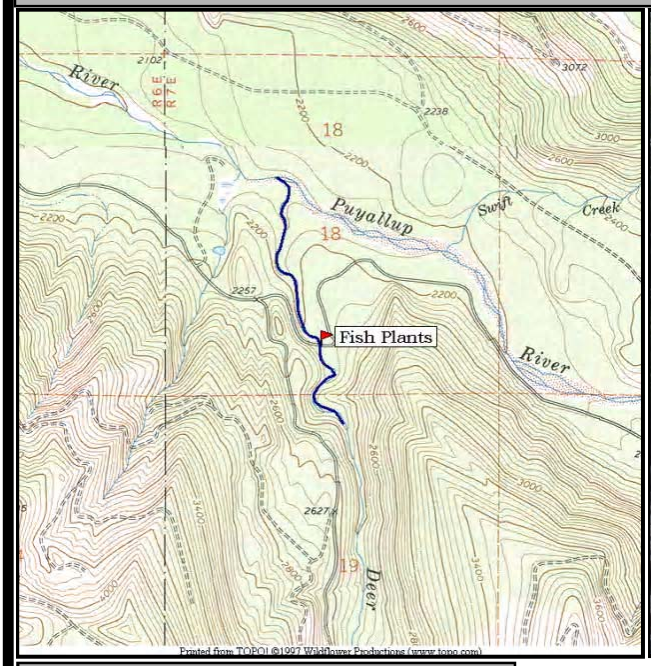



*The 2005 Spring Chinook were released from the Cripple creek pond on May 27.*

**Approximately 50,000 plus Spring chinook from the Muckleshoot White River hatchery are transported to the Cripple creek acclimation pond in early Spring, and released in late Spring. All fish are mass marked with left or right ventral fin clips. Odd brood years are marked with left ventral clips, and even years with right ventral clips. These fish can later be identified when caught at the USACE fish trap in Buckley and passed above the Mud Mountain dam to spawn.**

# DEER CREEK

**WRIA: 10.0685 - PUYALLUP RIVER** **2004 - 2005**




**River miles surveyed:** 0.0 to 1.0
**Date Surveyed:** November 3
**Species surveyed:** Chinook, Coho

**Access**

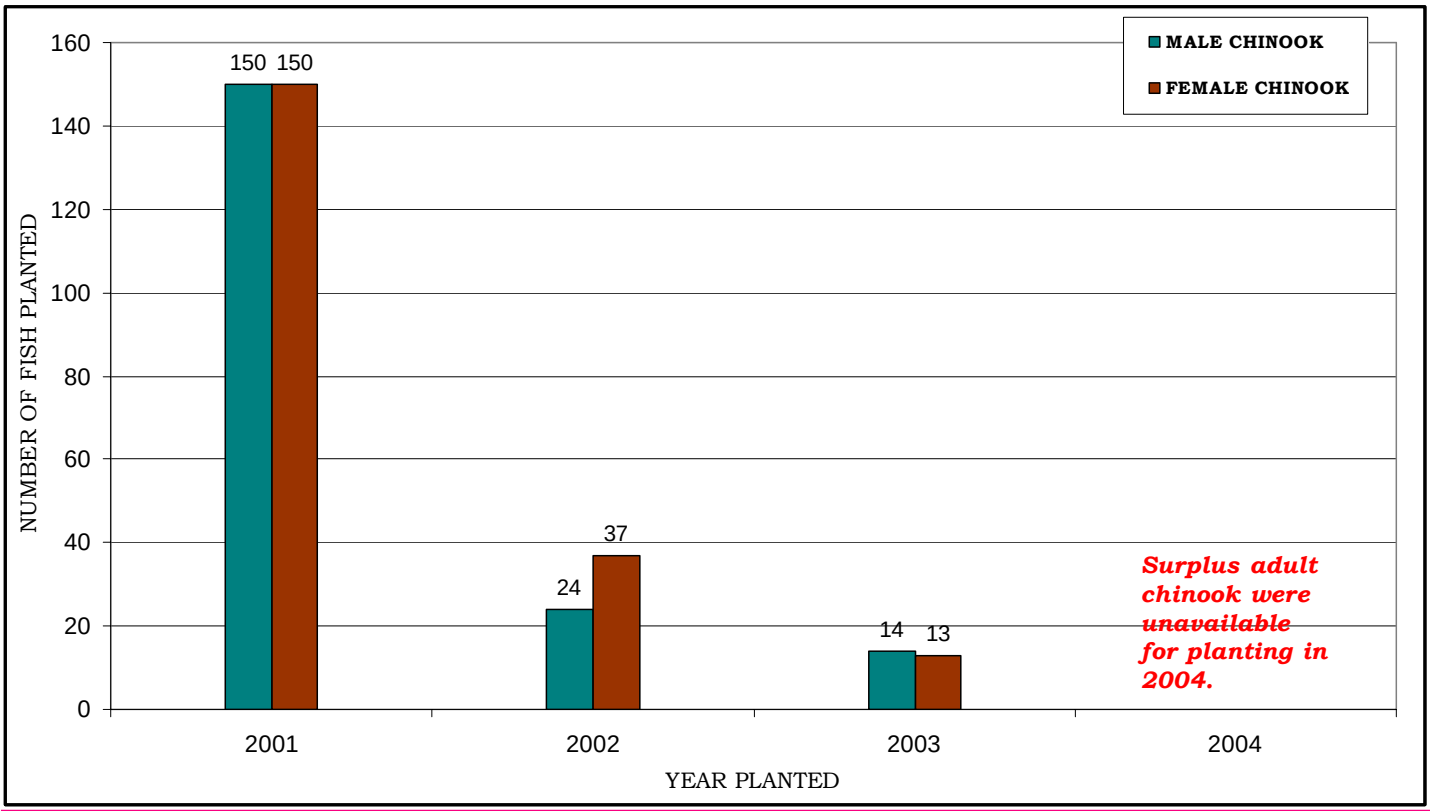
**Mile 0.5:** Deer creek is located just of the main line on the 2 road. Take the left spur that is gated just past the cowskull acclimation pond road.

**Deer creek looking downstream at RM. 0.5. This is the location where surplus fish from WDFW Voights creek hatchery are planted. Surplus adult chinook are planted in late summer to early fall, and coho in late fall when available. Adult plant have been taking place since 1997.**

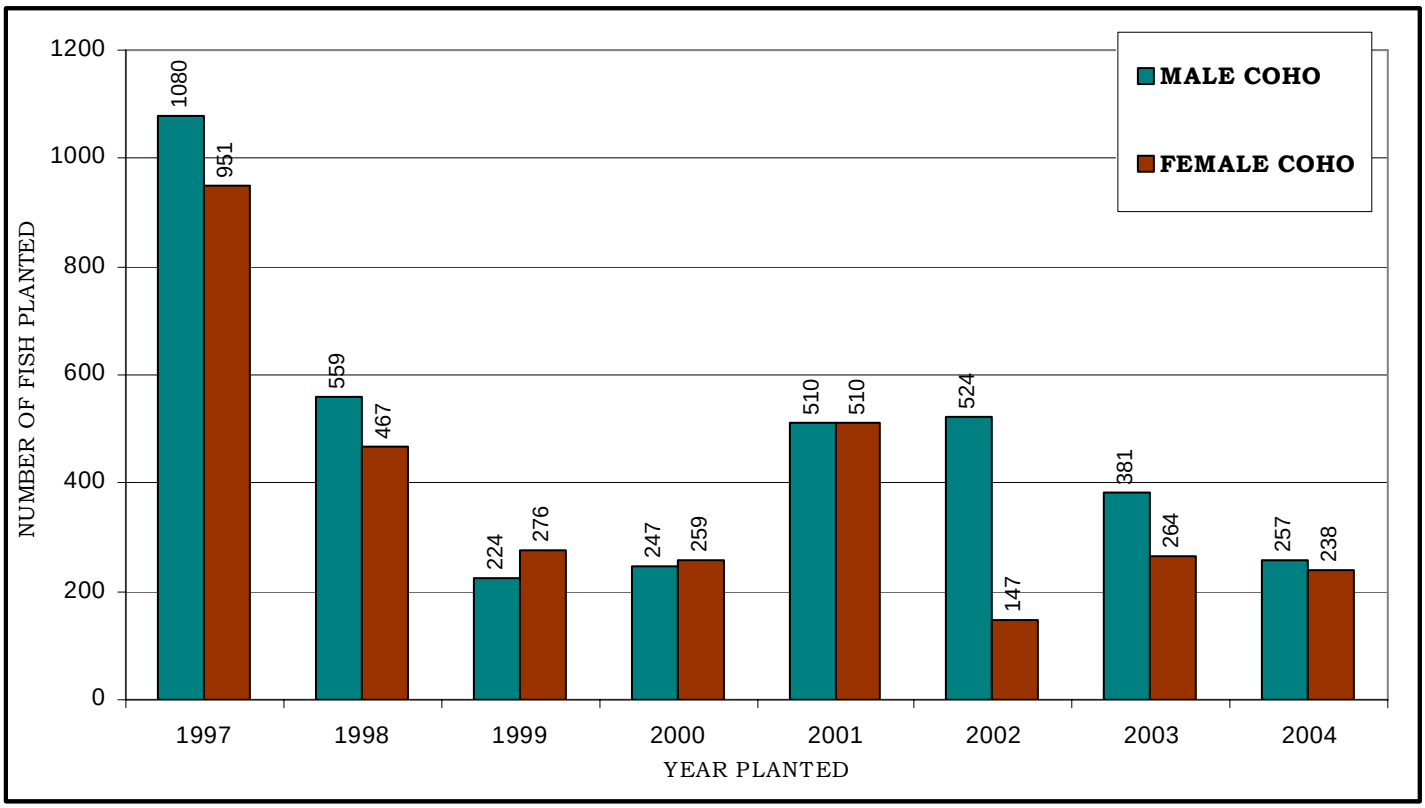
## DESCRIPTION

Deer creek is a upper Puyallup river tributary (RM 45.7) located on the left bank approximately 0.6 miles below Swift creek. Nearly the entire creek flows within the Rainier Timber-Kapowsin tree farm (Campbell Group LLC), where logging roads and timber harvesting have impacted portions of the stream in the past, currently a good buffer zone exist along the majority of the creek. The creek is confined by moderate to steep walls. There is an impassable falls at approximately RM 2.7. The gradient along the lower 1.5 miles is moderate with numerous deep pools and good spawning medium. Deer creek is above the Electron diversion, so as with several of the other tributary in the upper Puyallup watershed, it is part of the surplus adult chinook and coho planting program. Deer creek is one of the few streams in late summer and early fall with adequate water flow to plant adult chinook. Deer creek is not surveyed with any regularity, but instead it is spot checked to see how successful the adult plants were. Surplus adult chinook are planted in late summer to early fall, and coho (center right) in late fall when available. Adult plants have been taking place since 1997 (left), yet no natural returns have been documented. However, natural returns have occurred in Rushingwater, Niesson and Kellog creeks.

# DEER CREEK SURPLUS ADULT CHINOOK PLANTS (2001 - 2004)




# DEER CREEK SURPLUS ADULT COHO PLANTS (1997 - 2004)

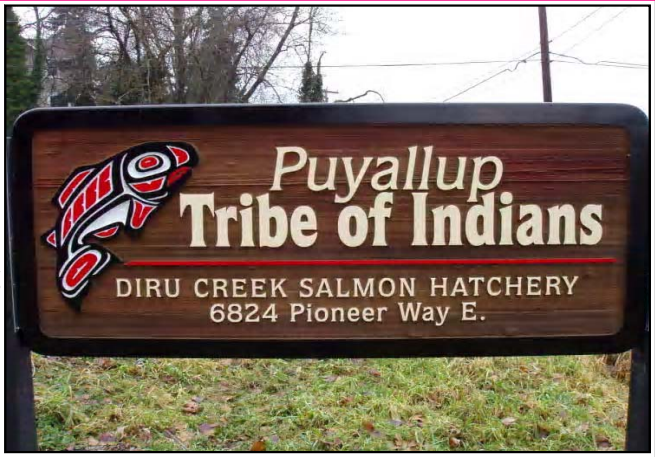


# PUYALLUP TRIBE OF INDIANS
# DIRU CREEK SALMON HATCHERY

**WRIA: 10.0029 - PUYALLUP RIVER** **2004 - 2005**

**Puyallup Tribe Salmon Hatchery Facility**
**River mile:** 0.5

## DESCRIPTION




Diru Creek Hatchery is located on Diru Creek (10.0029) a tributary to Clarks Creek in Puyallup, Washington. Water is supplied from two pumped wells (800 gpm) and gravity flow out of Diru Creek (200-500 gpm). Incubation consists of 20 vertical stacks of 12 trays. Initial rearing uses 16 shallow troughs in the hatchery building. Additional rearing containers include four 50'x5'x5' raceways, two 6696 cubic foot ponds (UP1 and UP2), and one 13,000 cubic foot pond (below, left) that are also used for holding returning adults.

In addition, the Puyallup Tribe operates seven acclimation ponds in the Puyallup Watershed. Three of the acclimation ponds are used for reintroducing fall chinook and coho into a 30-mile reach in the Upper Puyallup River above Electron Dam. Electron Dam has been an anadromous barrier for 97 years. A fish ladder was construction and completed in fall of 2000. Three other acclimation ponds are located in the Upper White River drainage. These ponds are used for reintroducing White River spring chinook back into their endemic range. All ponds have approximately 10,000 cubic feet of rearing space and between 1 to 3 cubic feet per second flow.

The Puyallup Tribe's restoration goal is to rebuild depressed chinook stocks and remove them from ESA listing. Using acclimation ponds, limiting harvest, and making substantial gains in habitat restoration, the tribe will be able to accomplish this task. Levee setbacks, oxbow reconnections both inter tidal and upland, Commencement Bay cleanup, and harvest cutbacks have already been initiated. Only the jump-starting of chinook in habitat areas devoid of fish remains the largest challenge. Acclimation ponds are a proven method in increasing fish numbers on the spawning grounds. Hatchery rearing 200,000 fall chinook for release on station and 200,000 for acclimation ponds in the upper Puyallup river for a combined 6,857 pounds of fish. Historically, fall chinook have been reared since 1980 with a variety of stocks, goals, and objectives.


Incubation room

**Spring Chinook Hatchery Production**

The three-acclimation ponds the Puyallup Tribe operates are satellite facilities to the White River and Minter Creek Hatcheries. Production levels have been around 400,000 smolts, however, it fluctuates based on available brood

stock. They have a production capacity of 837,000 zero age smolts.

**Fall Coho Hatchery Production**

Currently, 200,000 coho yearlings are imprinted and released in the Upper Puyallup Watershed. Coho originate from Voights Creek Hatchery where 100,000 are adipose clipped and coded wire tagged. Fish are released at 20 fish per pound, for a total biomass of 10,000 pounds.

**Winter Chum Hatchery Production**

The Puyallup Tribe currently raises 1.5 to 2.3 million-chum smolts for release into the lower Puyallup River. This program significantly augments a Tribal river fishery and All Citizen purse seine fishery in East and West Pass in Puget Sound. This stock originated initially from Chambers Creek. Puyallup Tribal Fisheries releases 1000 to 3000 pounds annually based on available brood stock returns to Diru Creek Hatchery. The program was started in 1991 and has become self-sustaining.

**Adult chum salmon are spawned three days a week or more during the peak of the run. As many as 2,700 fish may be processed in a day.**

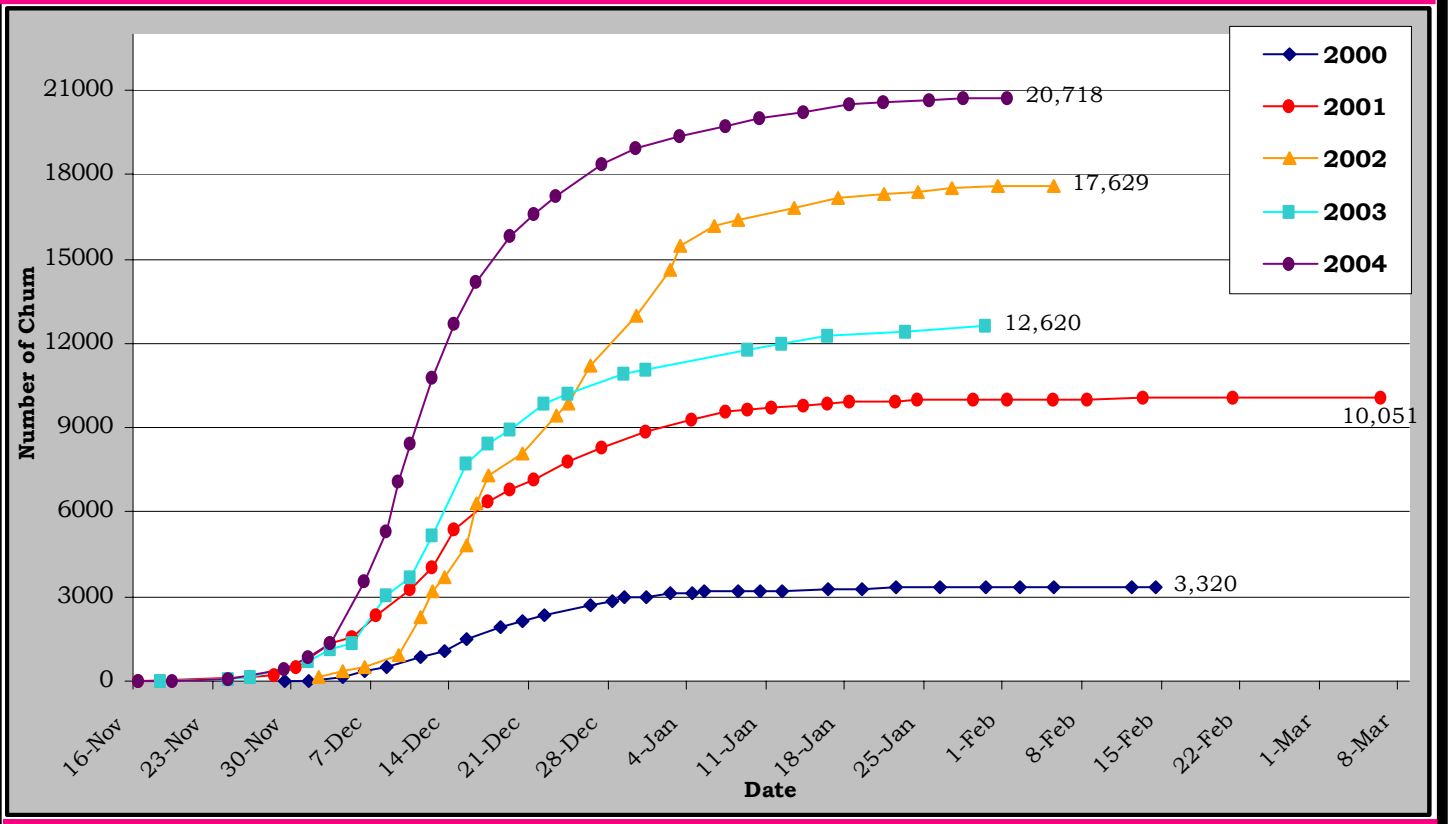
**Current Fall Chinook Hatchery Production**

In 2004, the Puyallup tribal fisheries department began acclimating and releasing fall chinook from the Clarks creek facility (page 21), discontinuing all chinook releases from the Diru creek hatchery. In early 2005, construction of a new incubation building was completed at Clarks creek. The incubation building houses 32 incubator stack, each capable of holding up to 77,000 chinook eggs, for a total capacity of approximately 2.5 million eggs. Once fish are ready to be moved from the incubators, they can be place in one of the 16 aluminum raceway-troughs and hand feeding can begin. The troughs are 16 feet in length with a flow rate of up to 25 gpm. When the fish are approximately 500 to the pound, they are transferred to one of the cement lined ponds. Holding the chinook in the cement pond is only temporary until they are up to a large enough size, usually in late April, to be massed marked via a automated tagger. Once tagged, the fish are planted in one of the two natural acclimation ponds until they are released in late May or early June.

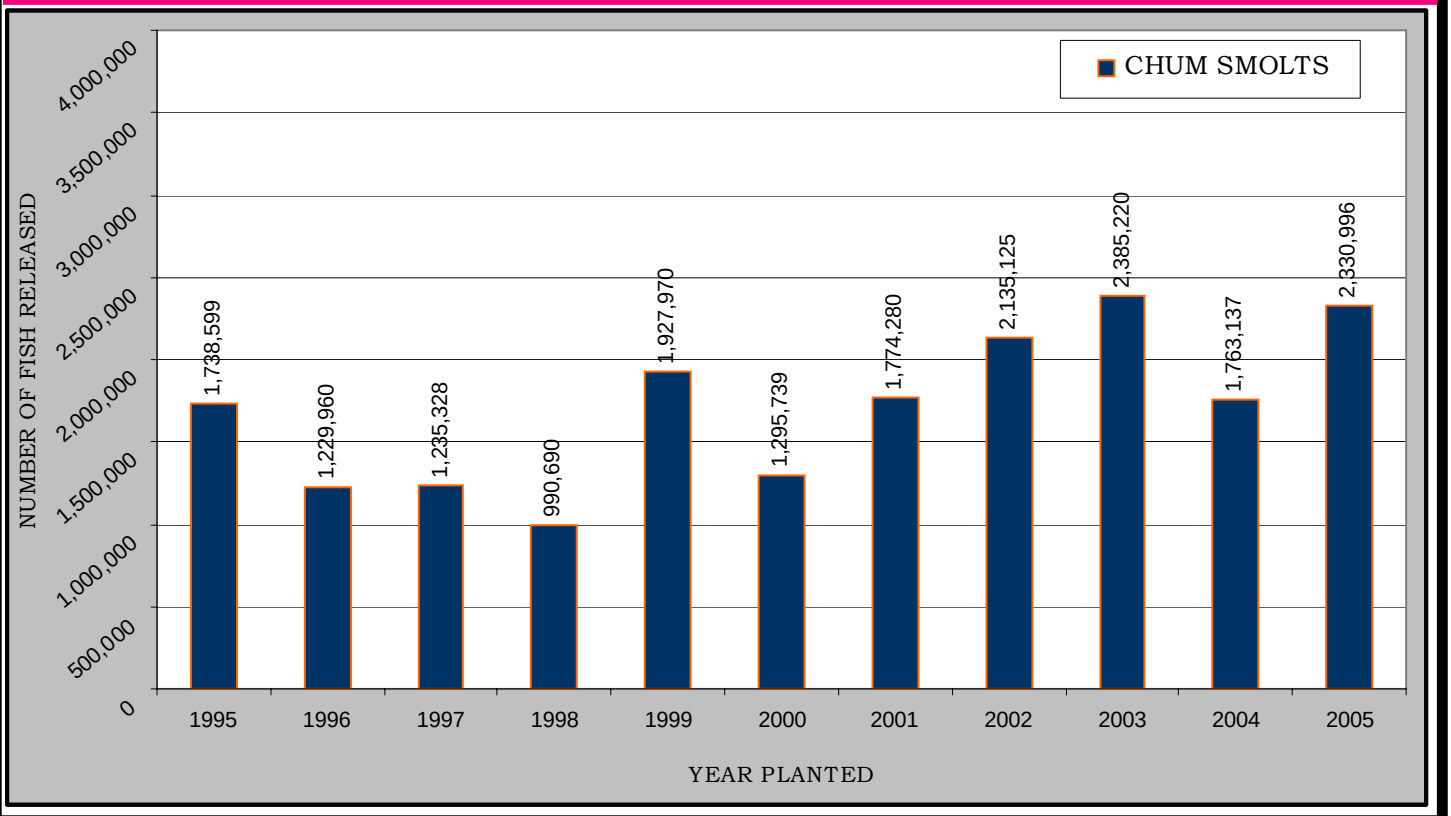
**Diru creek looking upstream as it flows out of a culvert under Pioneer Way. The hatchery is on the other side of the road (right).**

**Adult chum returning to the holding pond.**

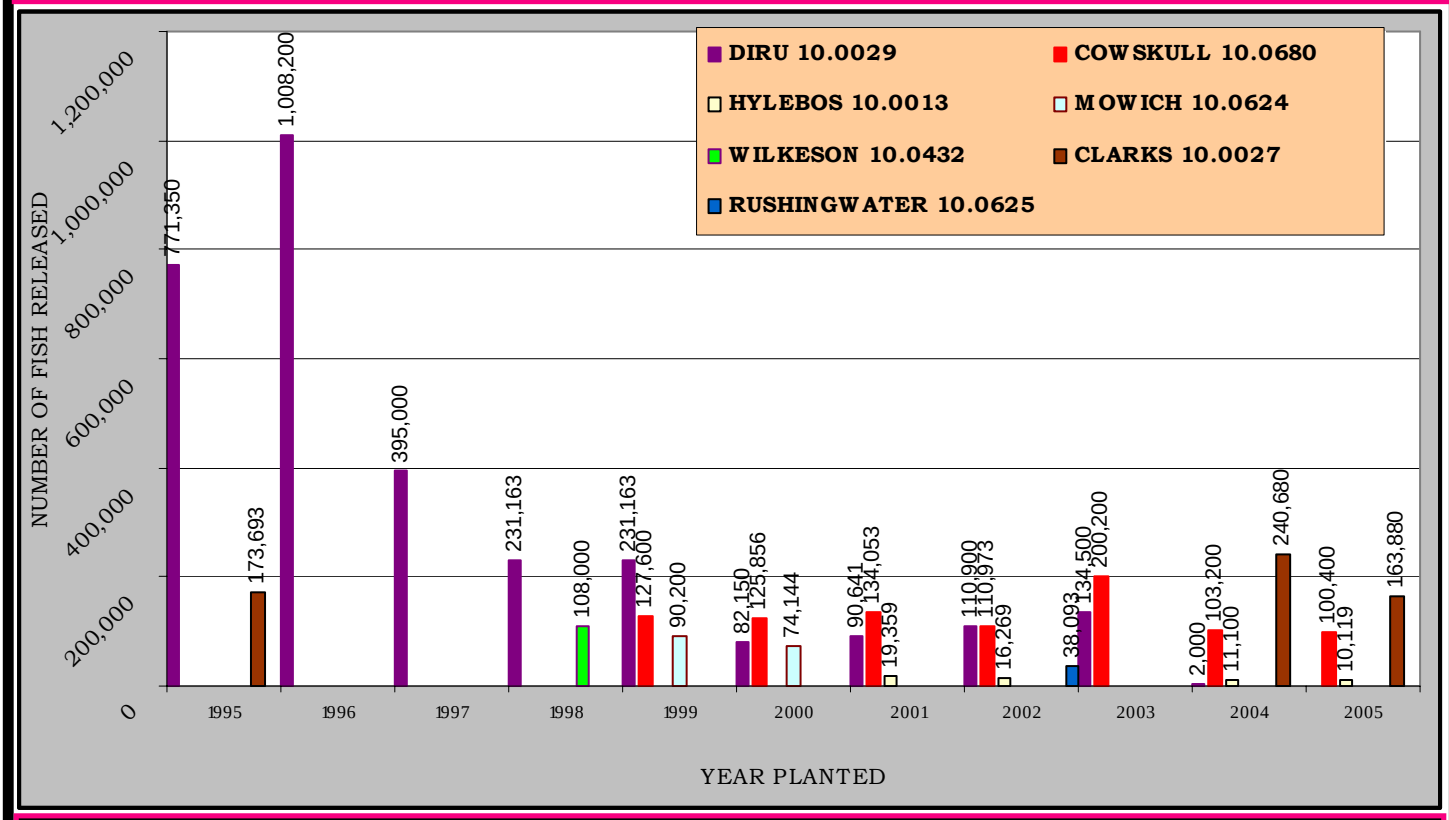
# DIRU CREEK HATCHERY ADULT CHUM RACK COUNT (2000 - 2004)



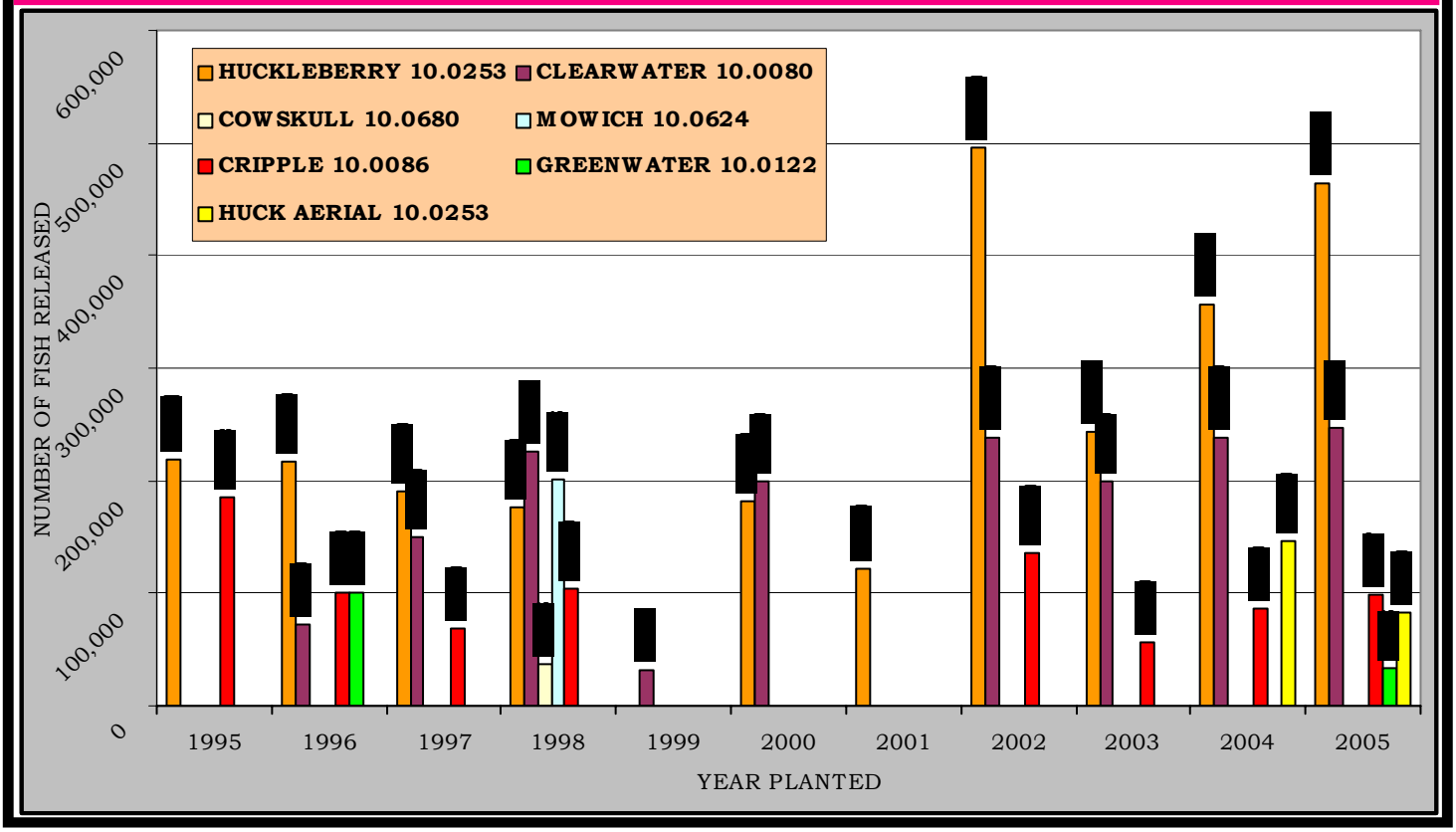

# DIRU CREEK CHUM SALMON SMOLT OUTPLANTS (1995 - 2005)



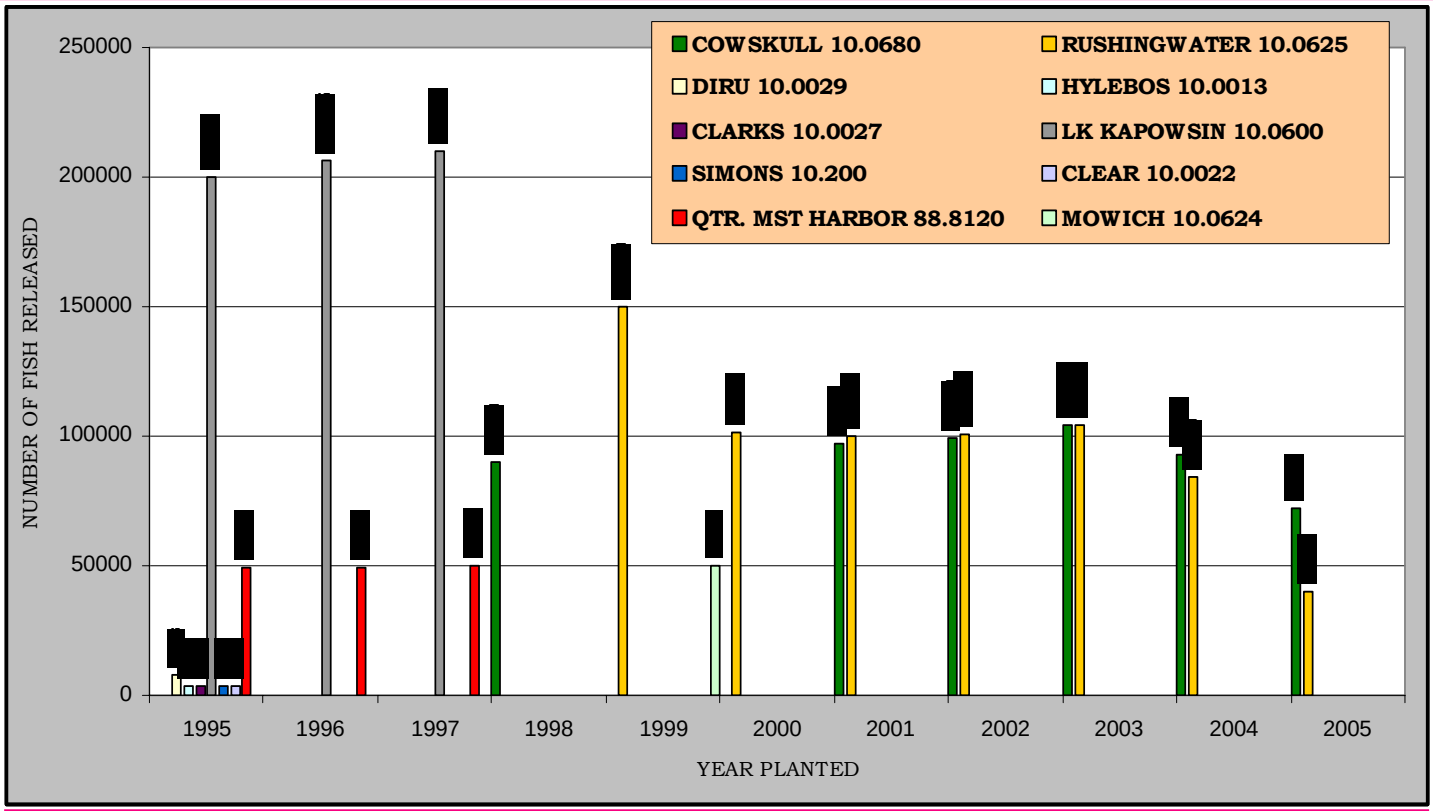
# JUVENILE FALL CHINOOK SALMON OUTPLANTS (1995 - 2005)




# JUVENILE WHITE RIVER SPRING CHINOOK OUTPLANTS (1995 - 2005)



# VOIGHTS CREEK FALL ADULT COHO SALMON OUTPLANTS (1995 - 2005)




## 2005 Salmon Releases for Acclimation Ponds, and Diru & Clarks Creek Hatcheries.

### Chum

| DATE (F) | Stream | WRIA | Number of Fish | Fish/Lb | Length (mm) | Biomass (lbs.) |
|---|---|---|---|---|---|---|
| 29-Mar-05 | Diru Creek | 10.0029 | 516,500 | 412.0 | 53.0 | 1253.6 |
| 11-Apr-05 | Diru Creek | 10.0029 | 67,360 | 354.4 | 55.0 | 190 |
| 11-Apr-05 | Diru Creek | 10.0029 | 67,360 | 354.4 | 55.0 | 190 |
| 11-Apr-05 | Diru Creek | 10.0029 | 67,360 | 354.4 | 55.0 | 190 |
| 11-Apr-05 | Diru Creek | 10.0029 | 74,116 | 354.4 | 55.0 | 209 |
| 22-Apr-05 | Diru Creek | 10.0029 | 409,300 | 543.0 | 48.3 | 754.0 |
| 30-May-05 | Diru Creek | 10.0029 | 680,000 | 454.2 | 51.0 | 1497.0 |
| 2-Jun-05 | Diru Creek | 10.0029 | 449,000 | 454.0 | 50.0 | 990.0 |
| | | | **Total: 2,330,996** | **Chum released** | | **5273.9** |

### Fall Chinook

| DATE (V) | DATE | Stream | WRIA | Number of Fish | Fish/Lb | Length (mm) | Biomass (lbs.) |
|---|---|---|---|---|---|---|---|
| 24-May-05 | 24-May-05 | Hylebos Creek | 10.0013 | 10,119 | 59.0 | 90.0 | 171.5 |
| 26-May-05 | 3-Jun-05 | Clarks Creek | 10.0027 | 163,880 | 57.0 | 91.5 | 2875.0 |
| 1-Jun-05 | 3-Jun-05 | Cowskull | 10.0680 | 100,400 | 69.8 | 86.3 | 1438.0 |
| | | | | **Total: 274,399** | **Fall chinook released** | | **4,485** |

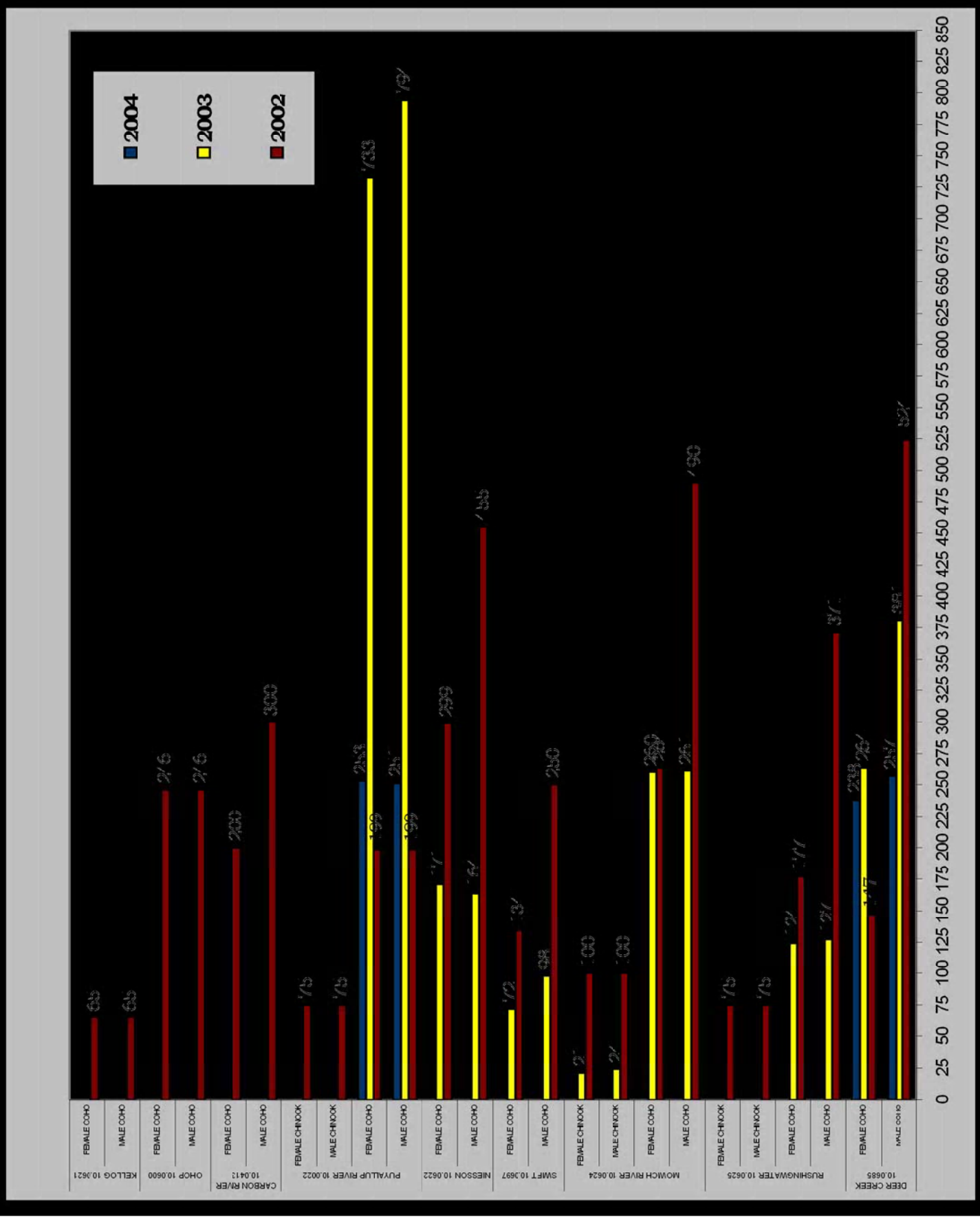
### Spring Chinook

| DATE (V) | DATE | Stream | WRIA | Number of Fish | Fish/Lb | Length (mm) | Biomass (lbs.) |
|---|---|---|---|---|---|---|---|
| 4-Apr-05 | 4-Apr-05 | Clearwater River | 10.0080 | 120,393 | 147.0 | 62.7 | 819.0 |
| 4-Apr-05 | 4-Apr-05 | Greenwater River | 10.0122 | 33,516 | 147.0 | 62.7 | 228.0 |
| 27-May-05 | 3-Jun-05 | Huck Aerial | 10.0253 | 82,450 | 100.0 | 76.0 | 825.0 |
| 27-May-05 | 3-Jun-05 | Huckleberry | 10.0253 | 464,980 | 90.0 | 78.0 | 5166.0 |
| 27-May-05 | 3-Jun-05 | Cripple | 10.0086 | 99,587 | 75.0 | 82.0 | 1328.0 |
| 31-May-05 | 3-Jun-05 | Clearwater River | 10.0080 | 132,498 | 69.8 | 86.3 | 1827.0 |
| | | | | **Total: 928,424** | **Spring Chinook released** | | **10,193** |

### Coho

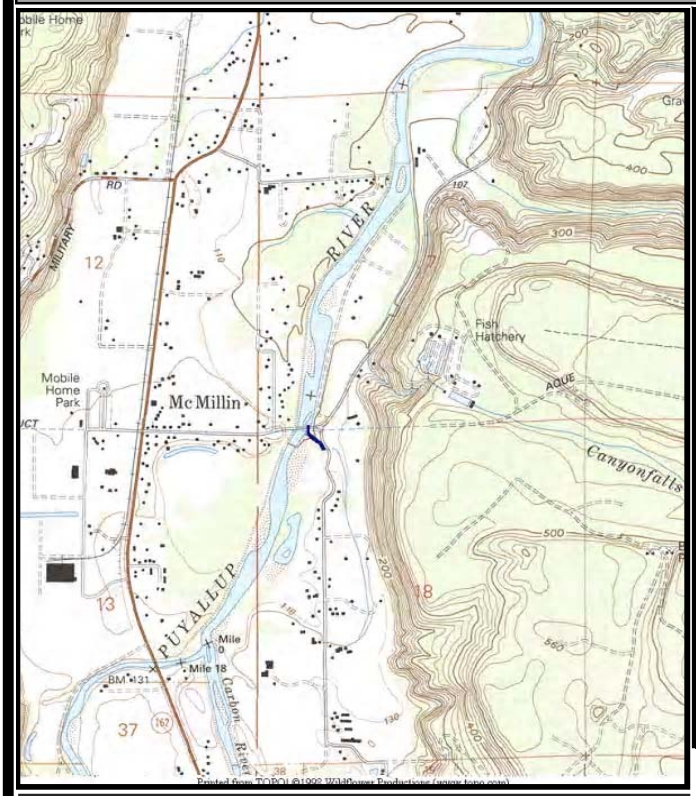
| DATE (V) | DATE | | WRIA | Number of Fish | Fish/Lb | Length (mm) | Biomass (lbs.) |
|---|---|---|---|---|---|---|---|
| 14-Mar-05 | 21-Mar-05 | Rushingwater Creek | 10.0625 | 39,930 | 26.5 | 118.0 | 1507.0 |
| 14-Mar-05 | 21-Mar-05 | Cowskull Creek | 10.0680 | 71,890 | 26.5 | 118.0 | 2712.0 |
| | | | | **Total: 111,820** | **Coho Released** | | **4,219** |

# VOIGHTS CREEK ADULT FALL COHO AND CHINOOK SALMON OUTPLANTS (2002 - 2004)



# DOLLAR CREEK

**WRIA: 10.0412 - PUYALLUP RIVER** **2004 - 2005**




**Upstream photo showing Dollar creek as it flows through the Puyallup River channel. The Puyallup river can be seen in the upper right side of the photo.**

**River miles surveyed**: 0.0 to 0.2
**Dates surveyed:** 12/02/04 to 12/28/04
**Species surveyed:** Chum

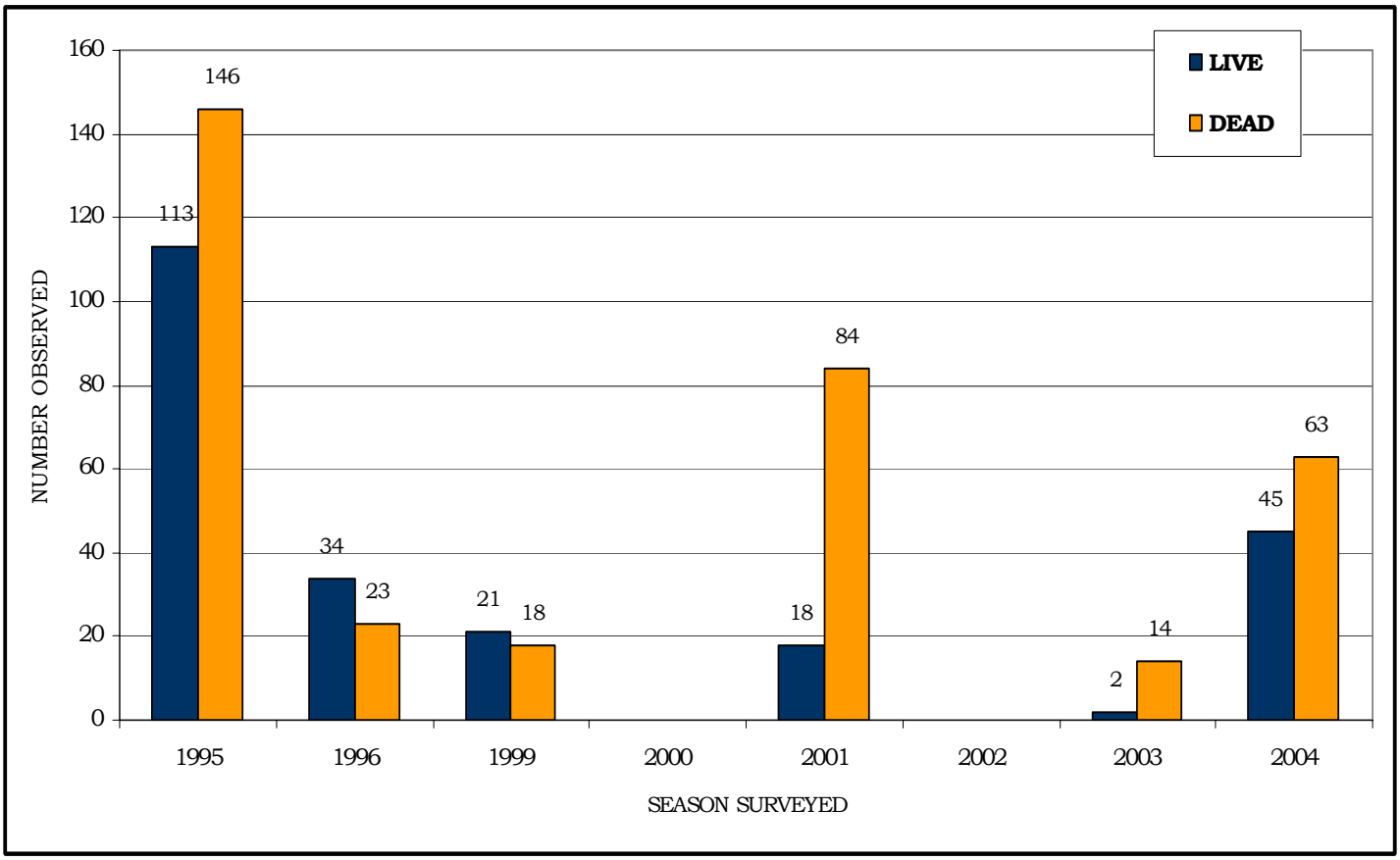
**Access**

**Mile 0.2**: Dollar creek enters the Puyallup flood plain at the Dollar boat launch on McCutcheon Rd. just upstream of 128th St. in McMillin.

## DESCRIPTION

The surveyed reach of Dollar creek is a seasonal, or intermittent section of stream that flows within the Puyallup River channel at RM 17.7 (bottom left). The channel is dry from summer through mid fall, preventing chinook from accessing and spawning in the creek. Due to the low and intermittent flows, only chum are typically seen spawning in the creek in late fall. The channel morphology changes from year to year due to high water events in the Puyallup River. The substrate throughout the lower 200 meters consist mostly of cobble and sand, but excellent patches of spawning gravel exists. The riparian, mostly alder, exists only along a single bank. Approximately 200 meters up from the mouth, the channel heads away from the Puyallup river and drains an old oxbow adjacent to the dike. Over the last several years the old oxbow has been slowly filled in with landscaping and other waste materials by private property owners. An additional small impact includes vehicles fording the top of the survey section in order to get out on the bar to launch or load boats in the Puyallup River. Passage out of the Puyallup River channel is questionable and no fish were observed above this point, however extensive surveys are not conducted. It is possible that the upper reaches of Dollar creek provide overwintering habitat for multiple species of juvenile salmonids.

# DOLLAR CREEK CHUM SEASON COMPARISONS (1995 - 2004)



# ELECTRON FISH BYPASS FACILITY

## PUGET SOUND ENERGY - PUYALLUP RIVER DIVERSION

**WRIA: 10.0021 - PUYALLUP RIVER** **2004 - 2005**

**Puget Sound Energy Electron Fish Bypass Facility**
**River mile**: 31.2 - 41.7
**Species sampled:** Chinook, Coho, Steelhead, Char, Cutthroat

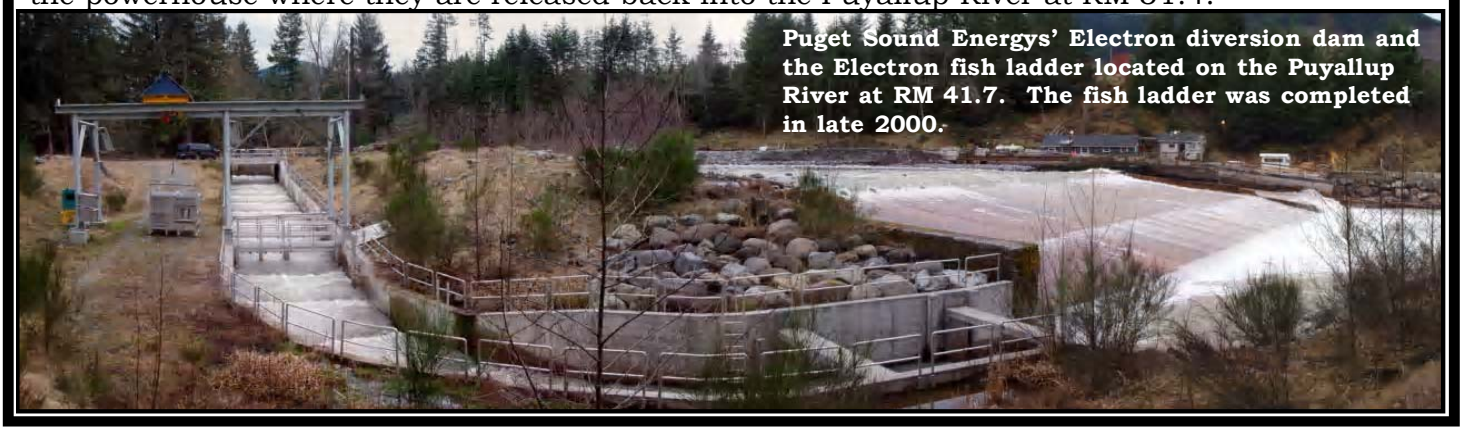
**DESCRIPTION**

Puget Sound Energy's (PSE) Electron Hydroelectric facility utilizes water diverted from the Puyallup River at RM 41.7 (bottom photo). The diverted water is channeled 10.1 miles through a flume and settling pond before collecting into a small reservoir, or forebay (right photo). The water held in the forebay is used to generate power via four turbines located in the power house approximately 800 feet below the forebay. Tens-of-thousands of salmonids including threatened chinook and char, coho, steelhead, cutthroat and rainbow trout are diverted down the flume and into the forebay annually. Many of the juvenile fish diverted into the forebay are drawn to the penstocks (intake) of the powerhouse, and are subsequently destroyed. Adults are too large to pass through the penstock screens.

In 2001, PSE completed construction on a fish bypass facility to help address the fish losses in the forebay. Even after the fish trap went on-line, chinook and coho losses have continued to range between 60-80%, with coho rates being slightly higher than chinook. Continuing effort are being made by the tribe and PSE to reduce these losses.

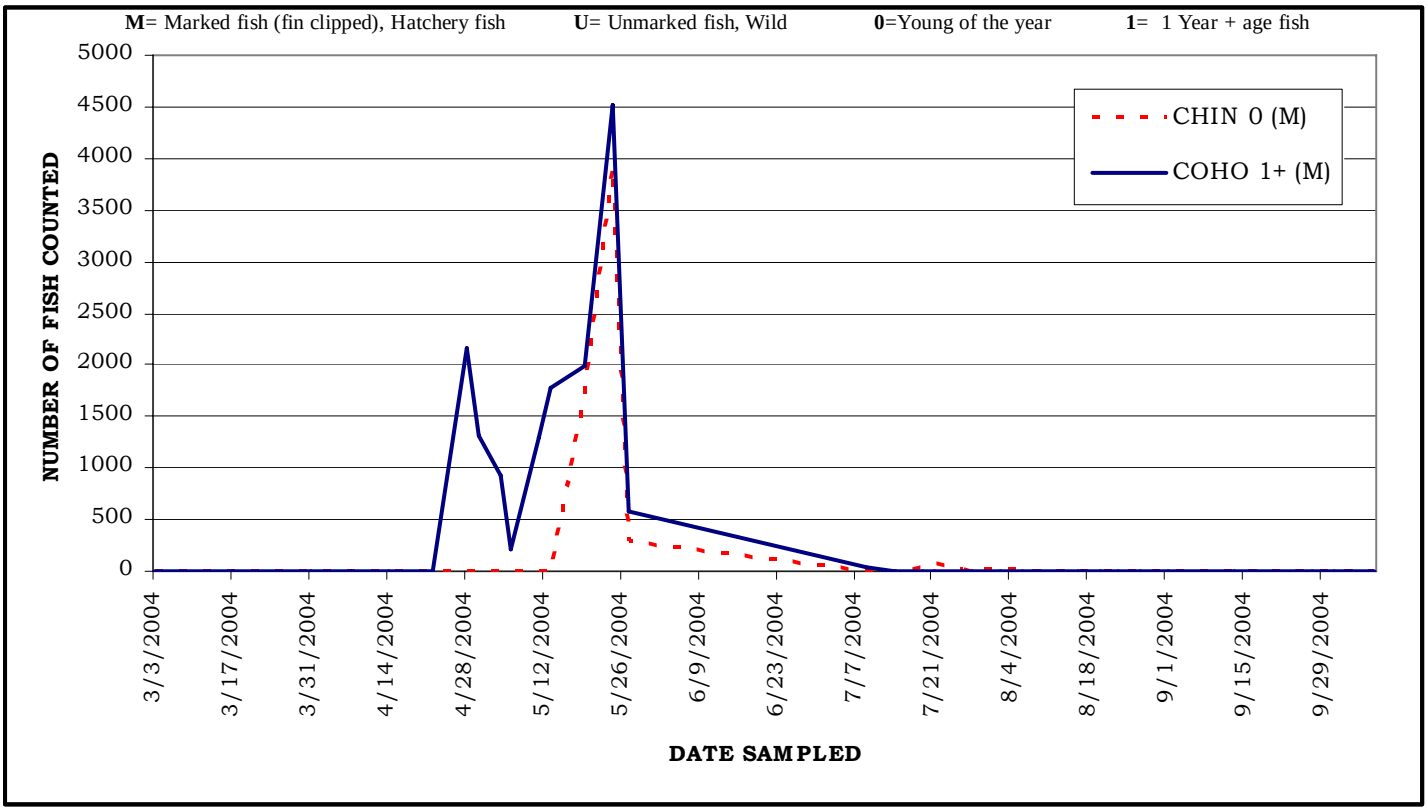
**Electron fish bypass facility.**

Upon entering the forebay, water flow is diverted towards the fish trap by large steel plates suspended by buoys. A exclusionary guide net is also in place across the forebay during the annual smolt migration period. Many of the smolts caught during this period are fish released from holding ponds above the diversion dam. These efforts are made to direct the fish into the trap where they are crowded into a hopper, and then deposited into a large holding tank. Fish are dip-netted from the holding tank and placed into a smaller container and anesthetized, identified and measured (right). Finally, fish are placed into a water trailer for transport down to the powerhouse where they are released back into the Puyallup River at RM 31.4.

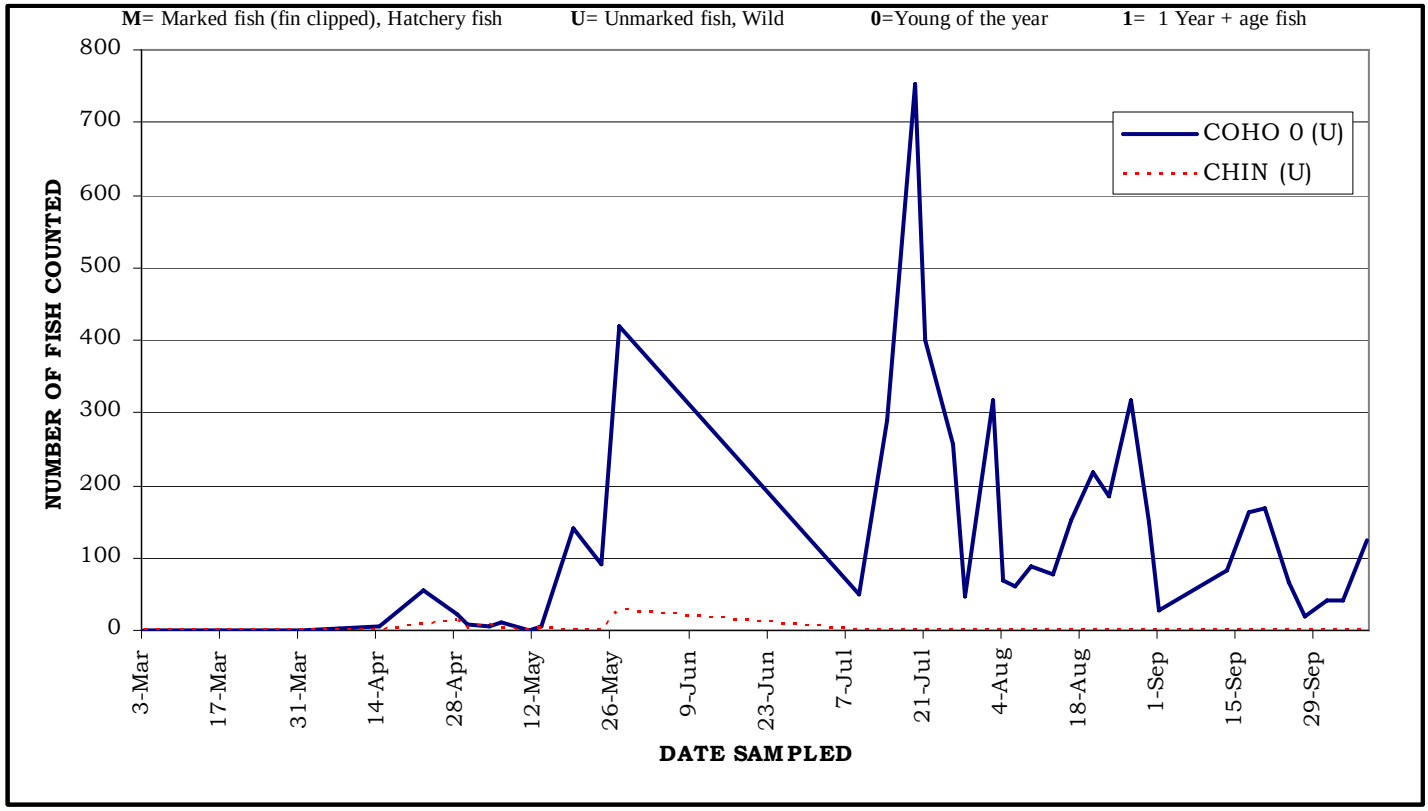


**Puget Sound Energys' Electron diversion dam and the Electron fish ladder located on the Puyallup River at RM 41.7. The fish ladder was completed in late 2000.**

## Number and Timing of Marked Chinook and Coho Captured at the Electron Fish Bypass Facility from February - October 2004

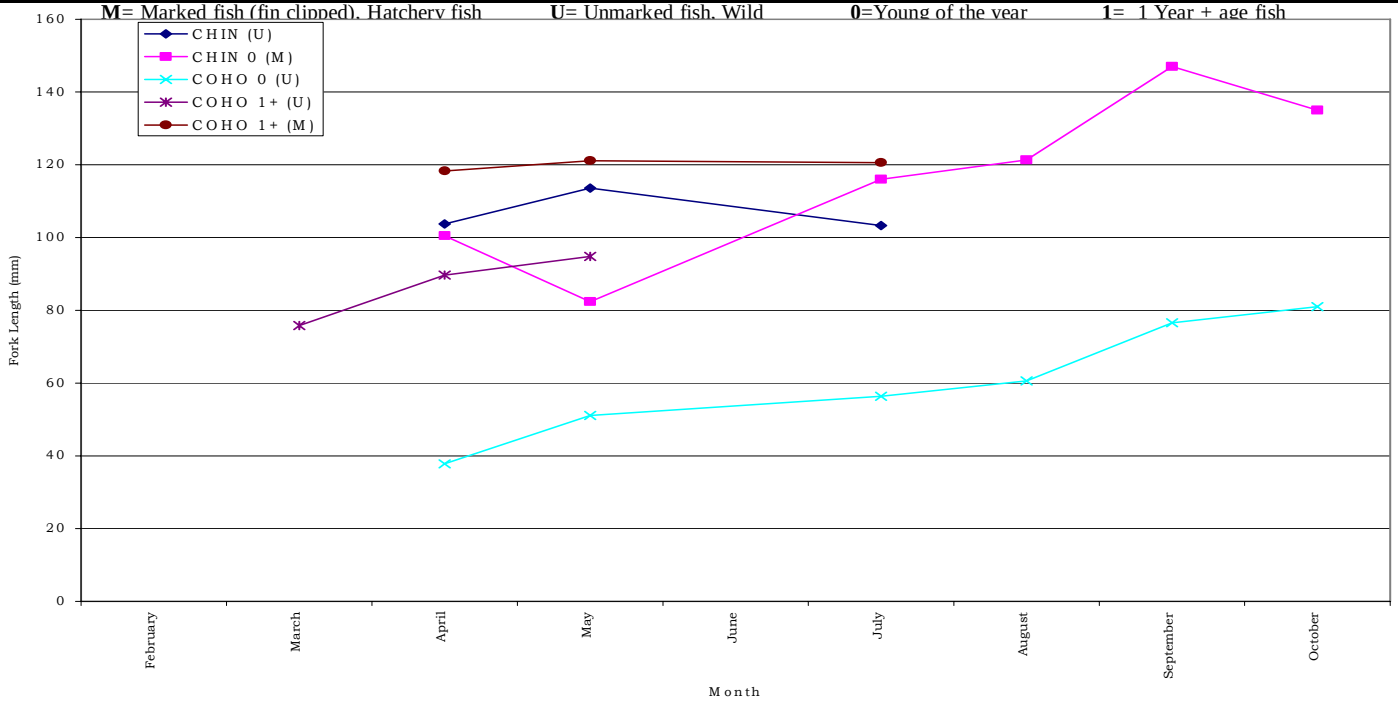



## Number and Timing of Wild Chinook and Coho Captured at the Electron Fish Bypass Facility from February - October 2004



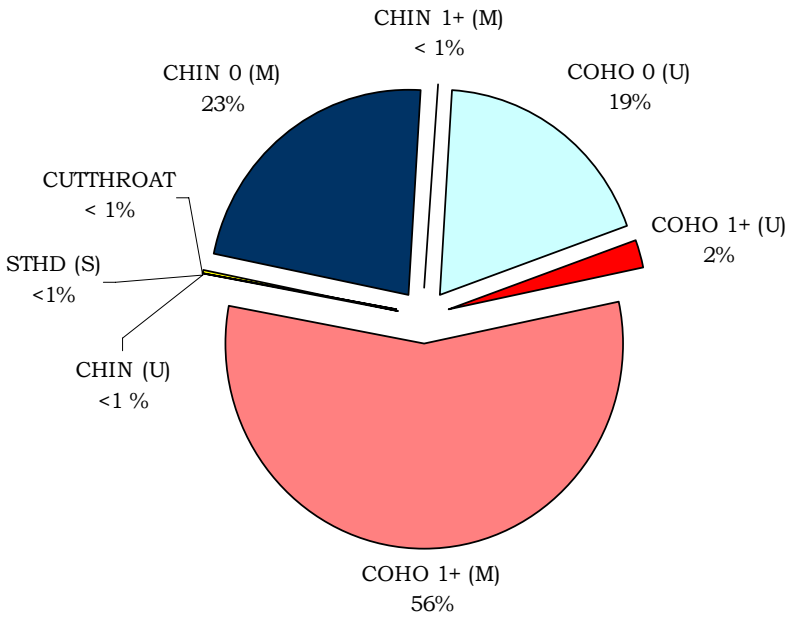
# Average Fork Length (mm) of Juvenile Salmon Captured at the Electron Fish Bypass Facility from February - Octoberber 2004

**M**= Marked fish (fin clipped), Hatchery fish **U**= Unmarked fish, Wild **0**=Young of the year **1**= 1 Year + age fish



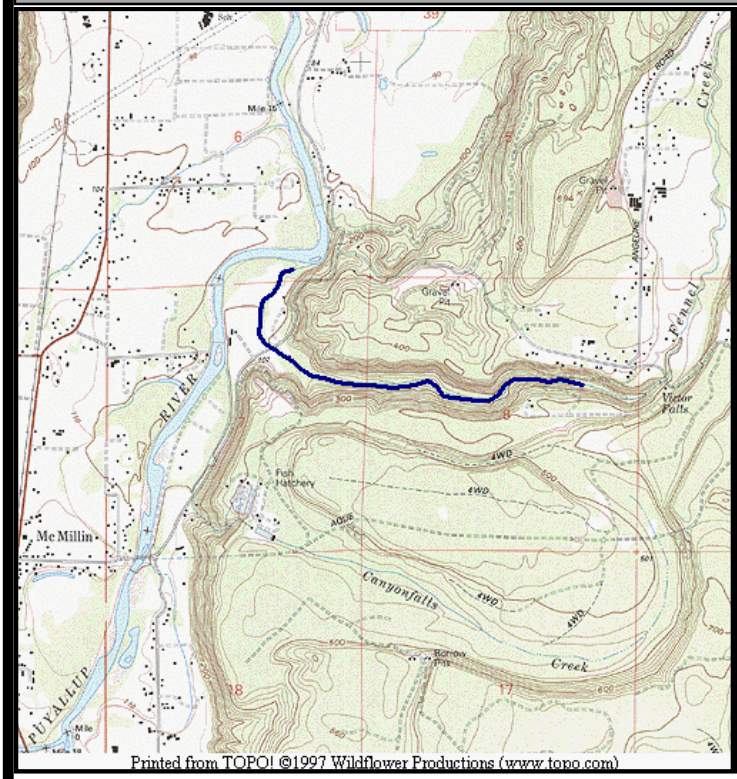

# Percentage of Juvenile and Smolt Salmon Captured at the Electron Fish Bypass Facility from February - October 2004

**M**= Marked fish (fin clipped), Hatchery fish **U**= Unmarked fish, Wild **0**=Young of the year **1**= 1 Year + age fish



# FENNEL CREEK

**WRIA: 10.0406 - PUYALLUP RIVER WATERSHED** **2004 - 2005**

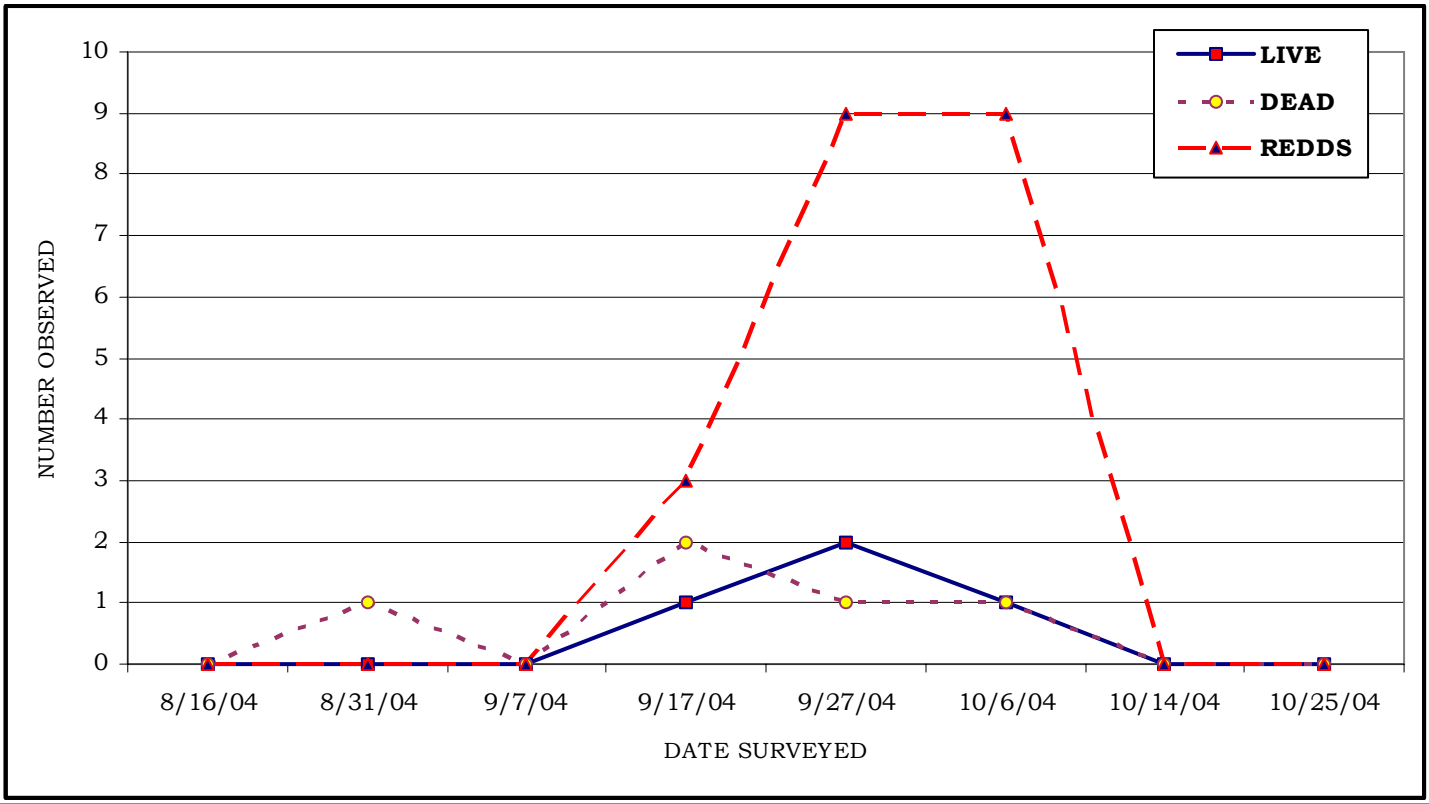



**River miles surveyed**: 0.0 to 1.7
**Dates surveyed:** 8/16/04 to 5/23/05
**Species surveyed:** Chinook, Coho, Chum, Pink, Steelhead

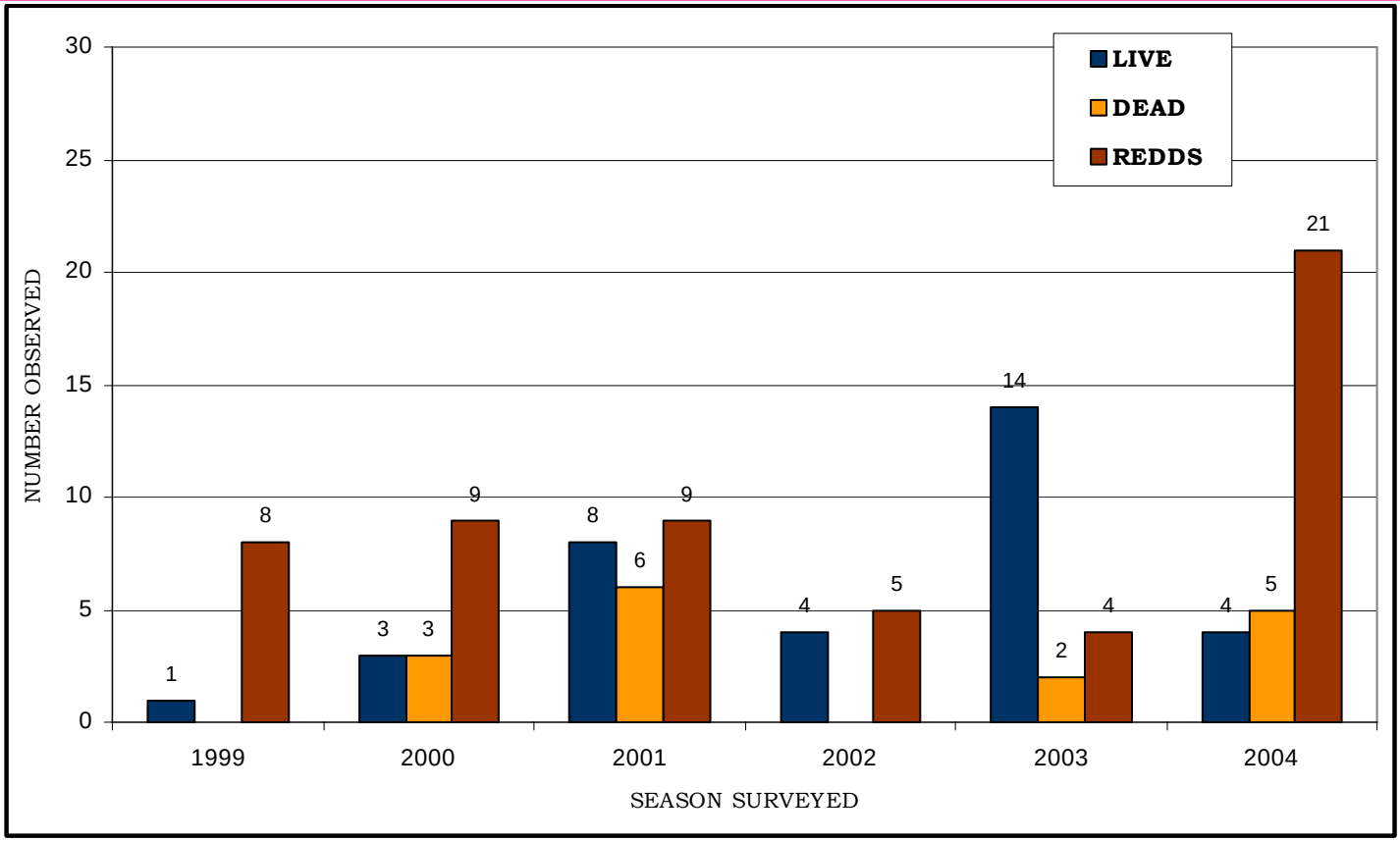
## DESCRIPTION

Fennel creek (Kelly creek) flows into the Puyallup River near Alderton at RM 15.5. Fennel has about 2 miles of anadromous usage with suitable habitat for chinook, coho, pink, chum and steelhead. The upper reach of Fennel creek is a complex, moderate gradient pool-riffle/step-pool stream flowing through a broad valley. Victor falls at RM 1.9 blocks any further upstream migration. Little or no development exist along most of the creek, the riparian zone consists of a mature hardwood forest with a dense understory of salmonberry and vine maple. Throughout the upper 1.5 mile section, abundant LWD lies in and adjacent to the channel, as well as numerous logjams. Spawning gravel is abundant and excellent throughout this reach, there are also numerous deep resting pools. The reach below the McCutcheon Rd. bridge is much lower gradient (bottom), it flows primarily within the Puyallup River flood plain. The channel contains excellent if somewhat unstable spawning gravels, with much lower amounts of LWD and less channel complexity. Approximately 0.2 miles upstream of the McCutcheon bridge is a short run spring fed tributary, Fennel tributary has excellent spawning gravel and supports high densities of chum salmon each year. Coho and chum totals on the following pages include both Fennel creek, and Fennel tributary data combined.

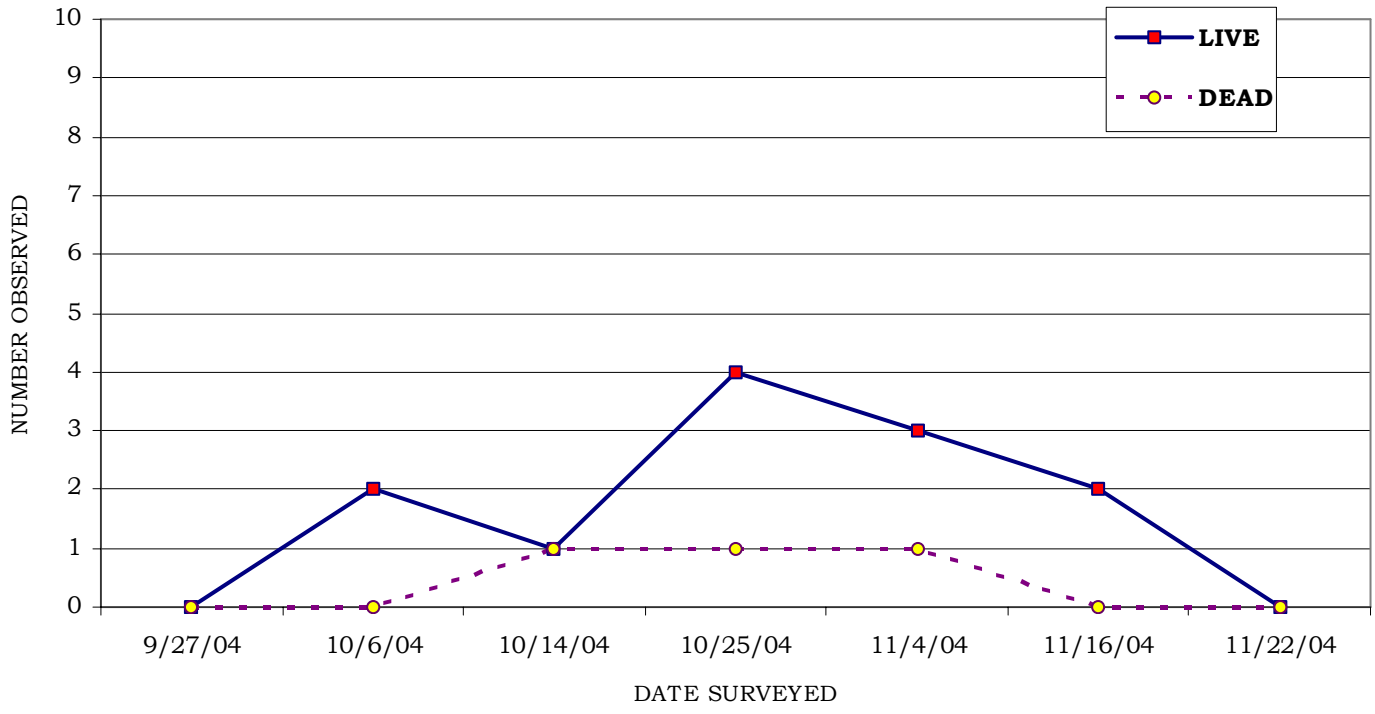
# 2004 FENNEL CREEK CHINOOK COUNTS



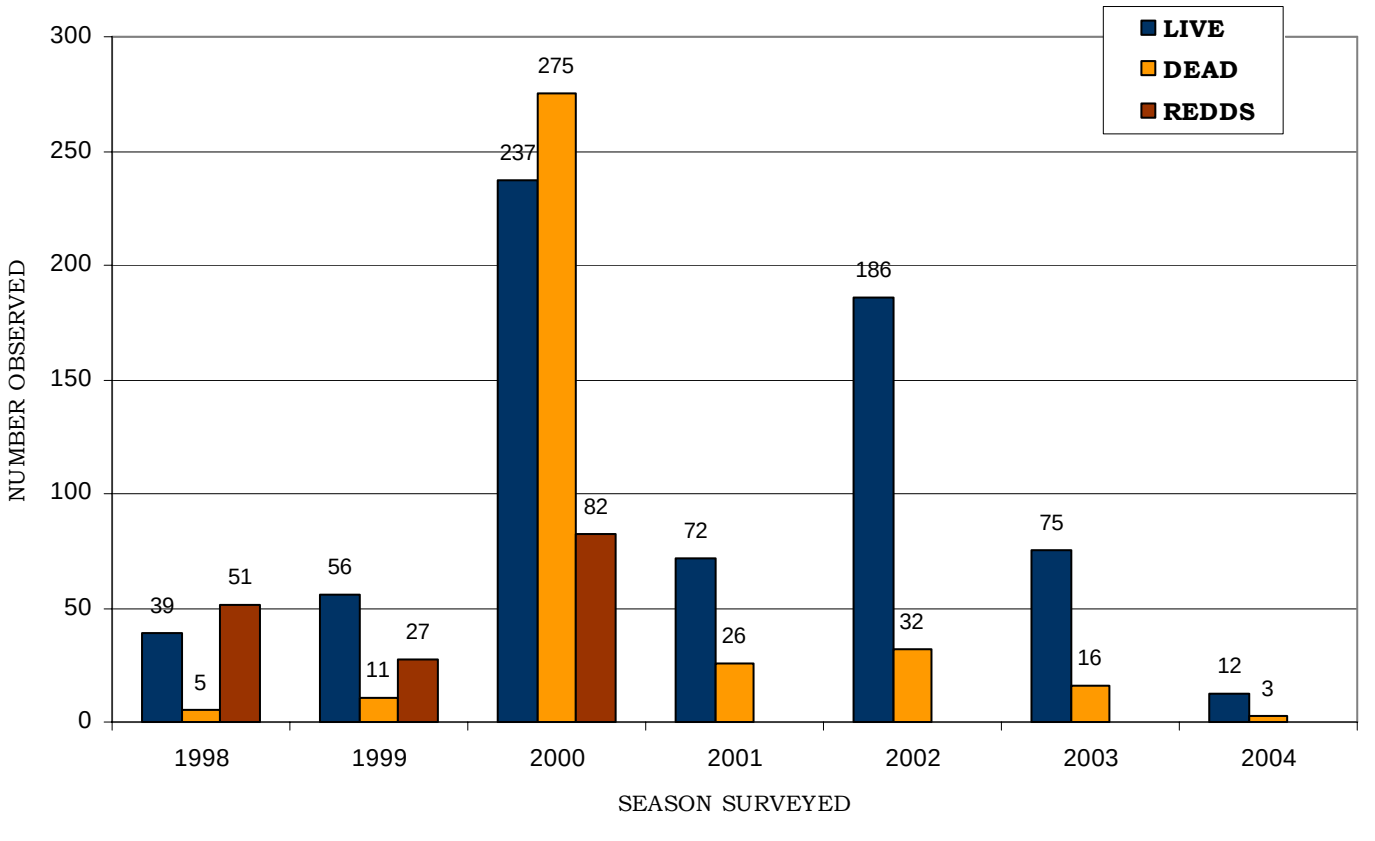

# FENNEL CREEK CHINOOK SEASON COMPARISONS (1999 - 2004)



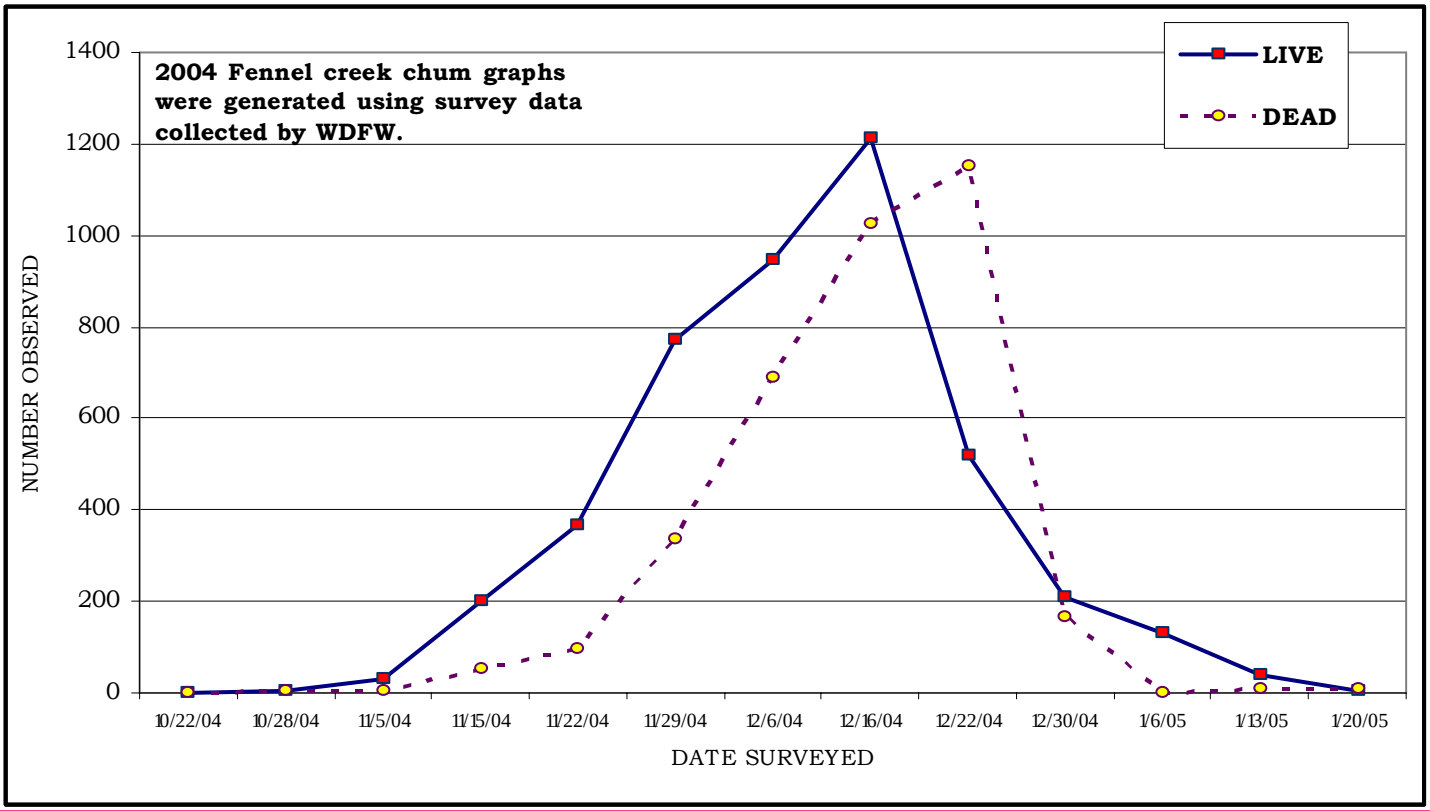
# 2004 FENNEL CREEK COHO COUNTS



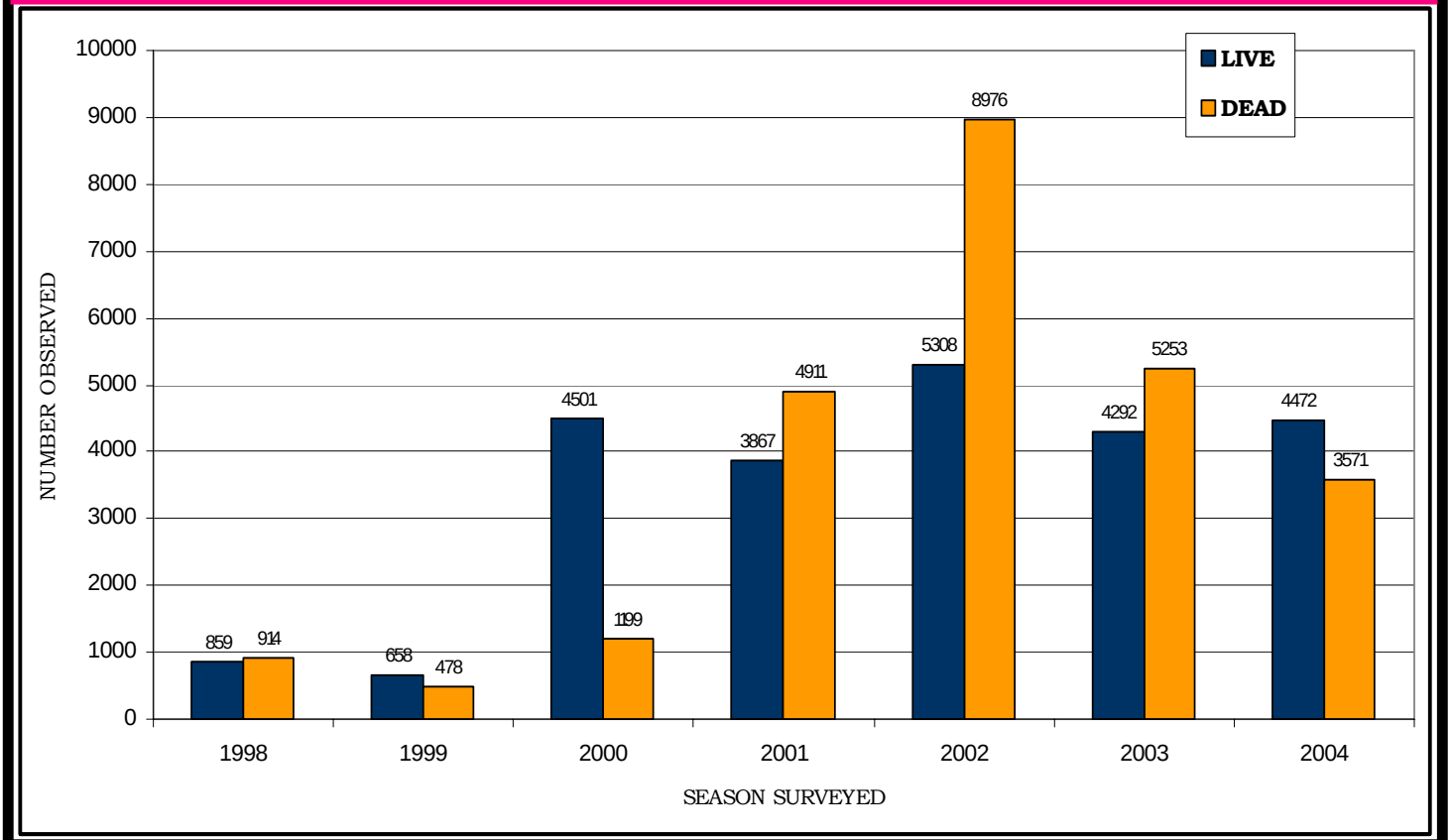

# FENNEL CREEK COHO SEASON COMPARISONS (1998 - 2004)



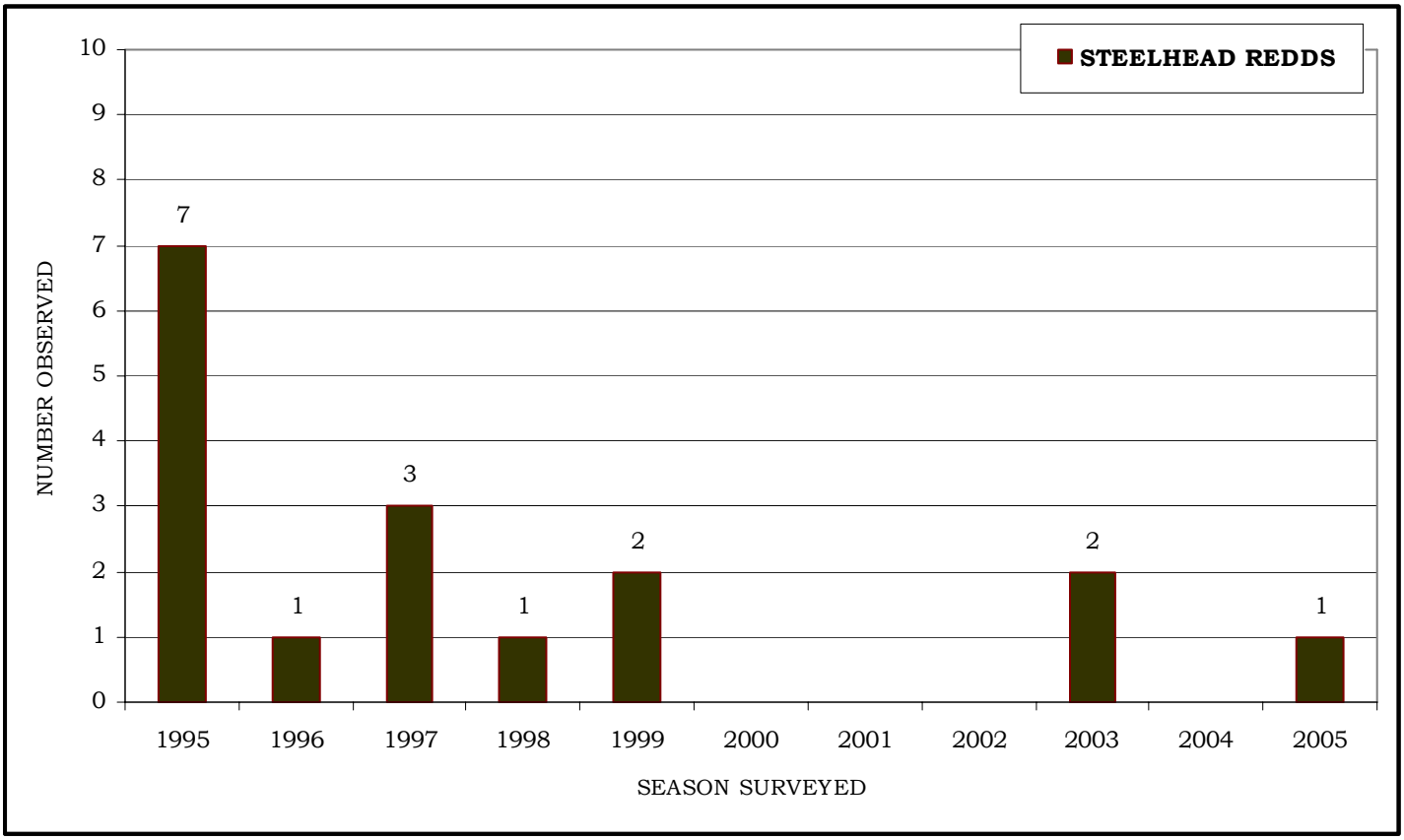
# 2004 FENNEL CREEK CHUM COUNTS




# FENNEL CREEK CHUM SEASON COMPARISONS (1998 - 2004)

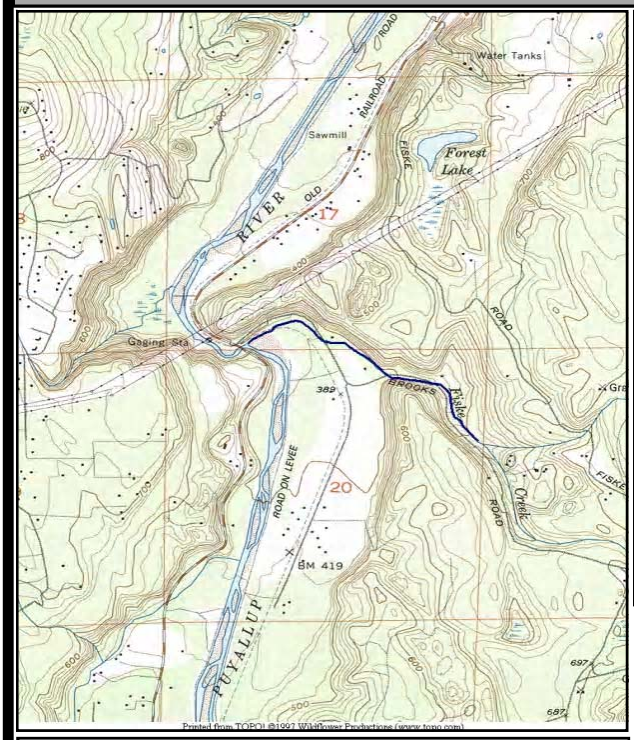


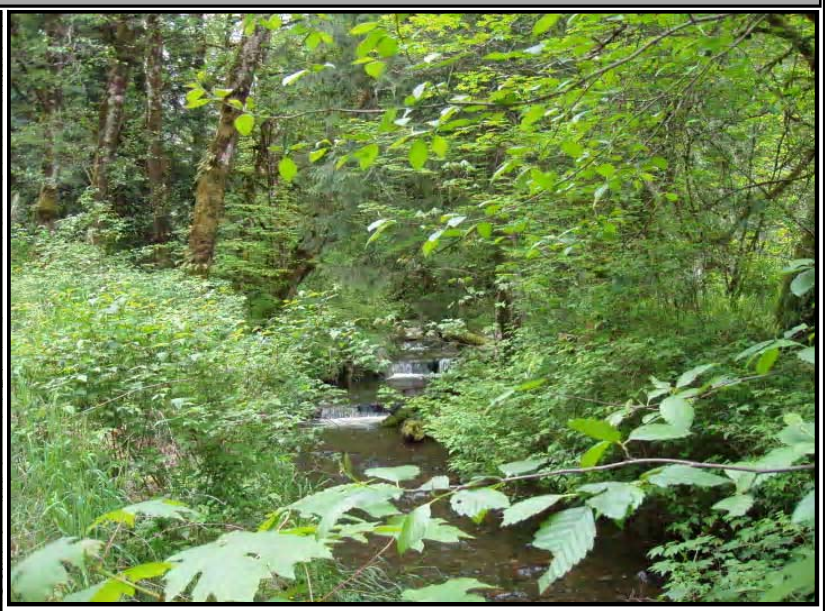
# FENNEL CREEK STEELHEAD SEASON COMPARISONS (1995 - 2005)



# FISK CREEK

**WRIA: 10.0596 - PUYALLUP RIVER** **2004 - 2005**



**River miles surveyed**: 0.3 to 1.1
**Dates surveyed:** 10/22/04 to 12/30/04
**Species surveyed:** Coho

**Access**

**Mile 0.0**: Brooks road near the High Bridge on the Puyallup river follows the North side of the creek and the mouth is approximately 200 yards from Oroville road.

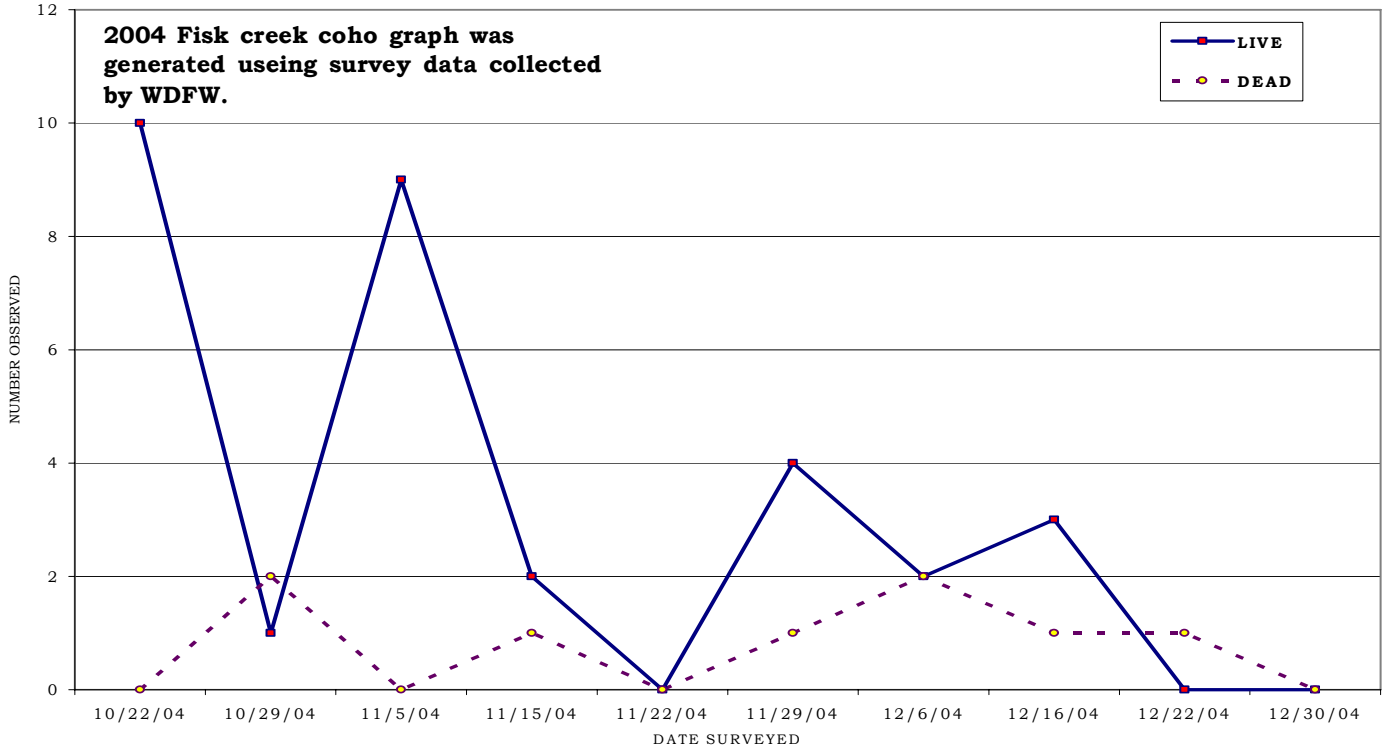
**Mile 1.1**: Brooks road crosses the creek again very near the edge of the Puyallup floodplain where the gradient increases.

## DESCRIPTION

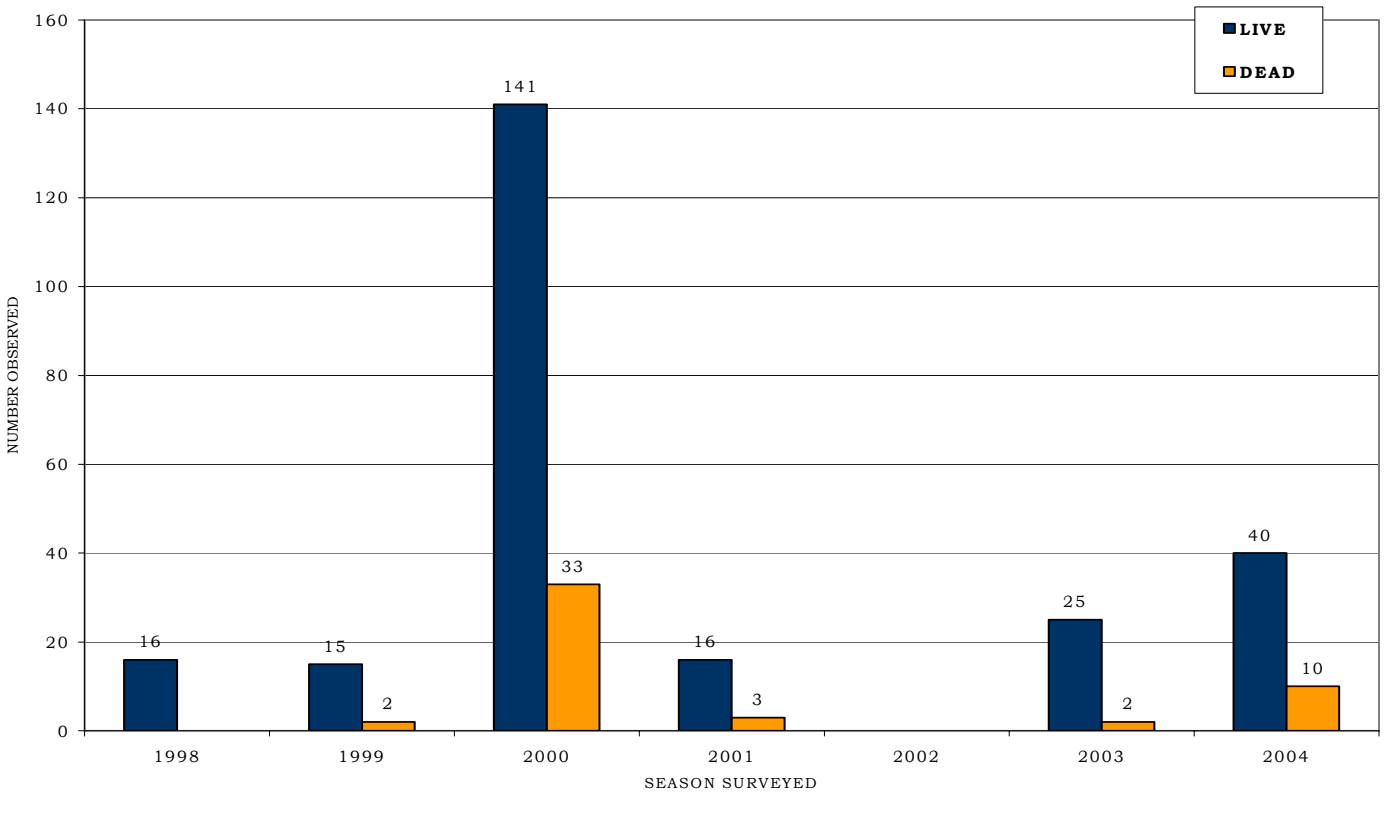
Fisk creek is a small tributary to the Puyallup River, entering the Puyallup at approximately RM 26.6. Fiske creek is one of 5 index streams in the Puyallup watershed that are surveyed for coho by the Washington Department of Fish and Wildlife. Coho are the only species observed spawning in significant numbers. Seasonal flows in Fisk creek are inadequate to allow access for chinook or steelhead to spawn, and the streams high location in the watershed make is less than ideal for chum. Fisk creek is a small stream with moderately low gradient and heavy riparian cover from the surrounding hardwood forest. Most of Fisk creek is confined due to natural channel cutting, steep banks and riprap. The channel is slightly incised and lacks any real complexity such as wetland or off-channel habitat, or large woody debris. Moderate amounts of development exist along the creek, consisting mostly of private family homes and a county road. The creek passes through a couple of fish passable culverts (lower left photo) and under a low narrow bridge along its lower reach. Some complexity has been added to the creek via small restoration projects such as the placement of small sill logs and boulders. Relatively abundant spawning gravel exists throughout most of the stream, but is somewhat compacted in the lower portion of the channel.

**Fiske creek just before it flows under Brooks road.**

# 2004 FISK CREEK COHO COUNTS

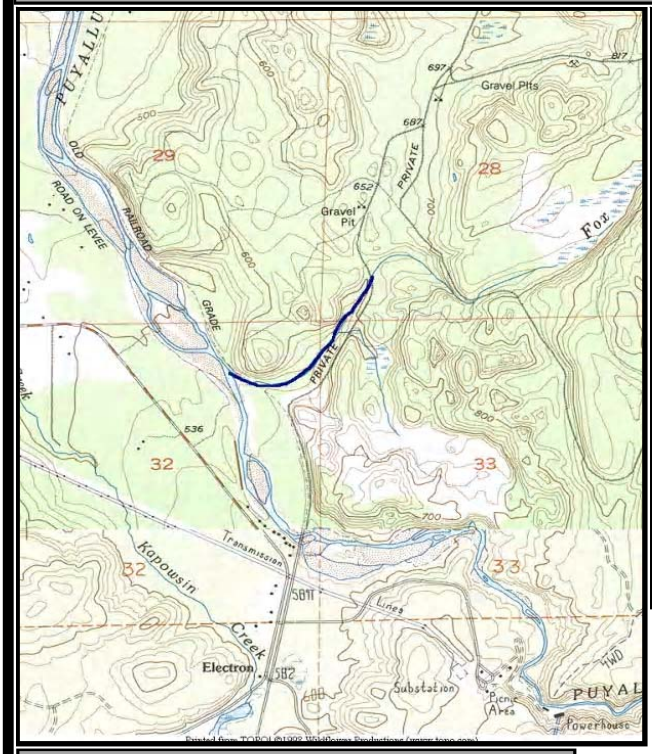



# FISK CREEK COHO SEASON COMPARISONS (1998 - 2004)



# FOX CREEK

**WRIA: 10.0608 - PUYALLUP RIVER** **2004 - 2005**




**A four to six foot high beaver dam located approximately 40 yards above the mouth of Fox creek has held up fish passage for the past few seasons. A section of the dam is removed during each survey to allow coho access to the spawning habitat above (October 2004).**

**River miles surveyed**: 0.0 to 1.0
**Dates surveyed:** 10/6/04 to 5/23/05
**Species surveyed:** Coho, Steelhead N/O

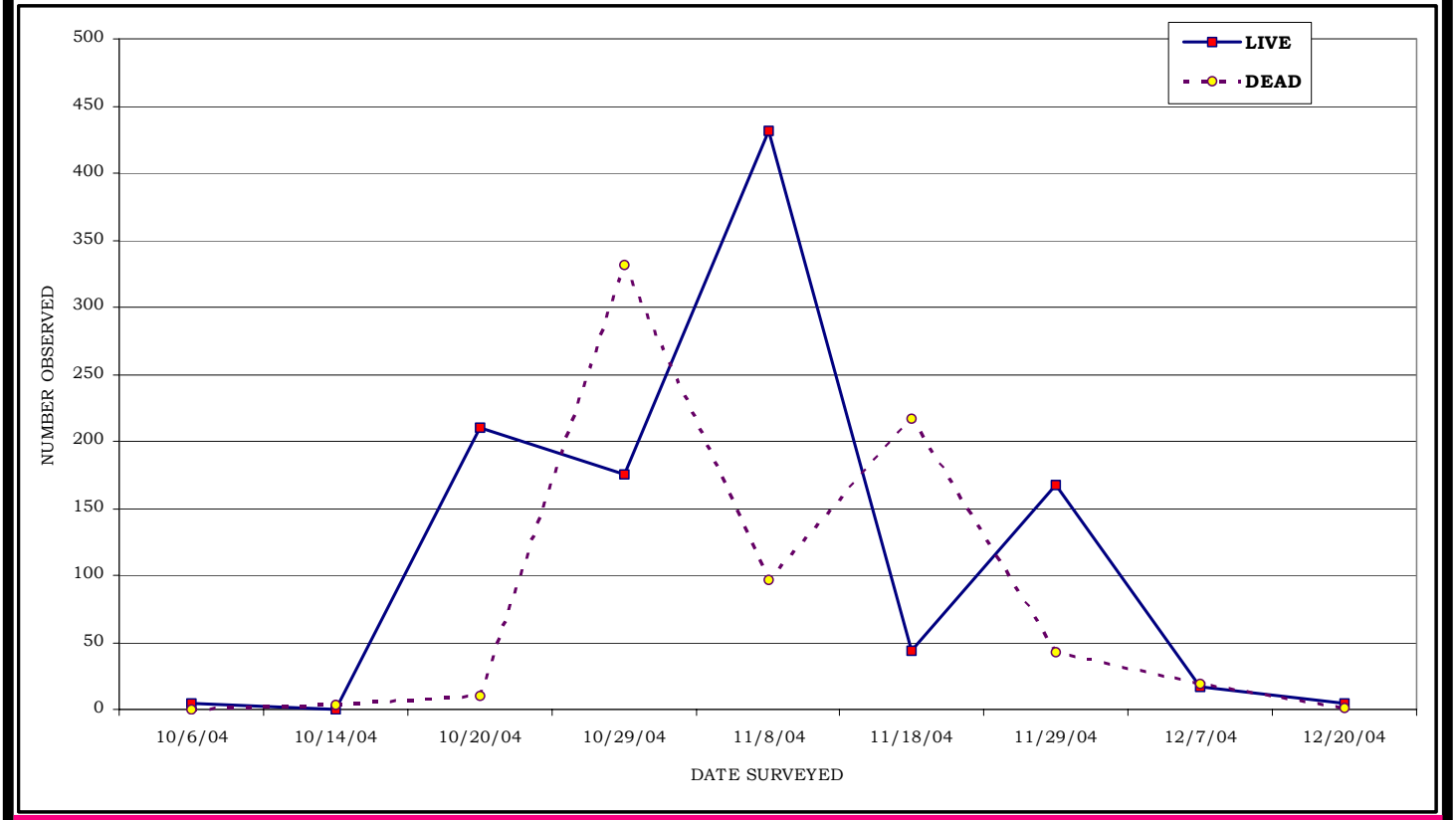
**Mile 0.6**: Take Hwy. 162 through Orting. Turn South on Orville Rd. Cross over Puyallup River bridge, continue to Rainier Timber's Bridge gate on Road 1. Bridge over Fox creek is approximately .7 miles in.
**Mile 0.0**. Take the first available left inside Bridge gate and follow abandoned road to the creek.

**Fox creek running through the center of the photo, enters the right bank of the Puyal-lup.**

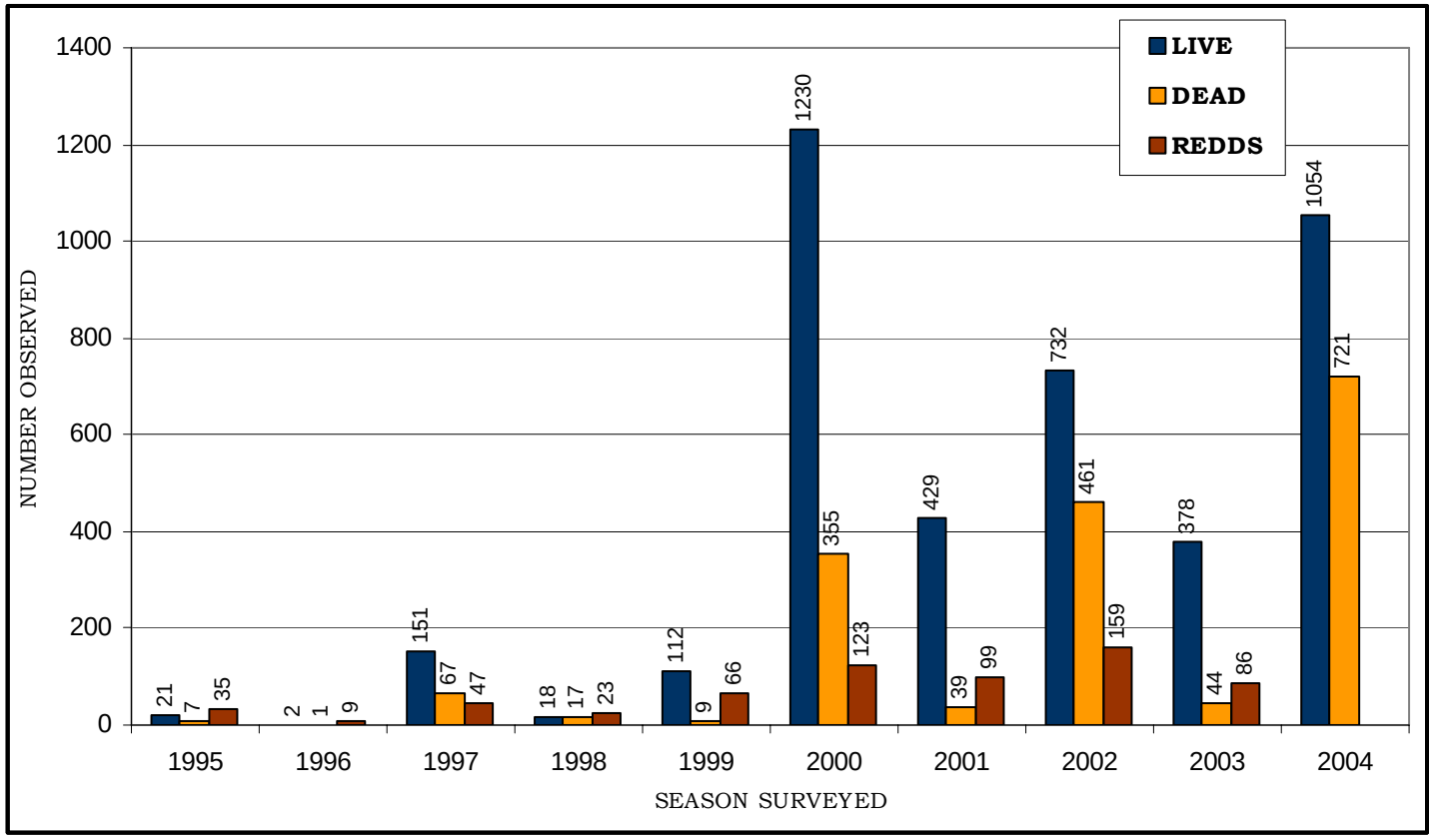
## DESCRIPTION

Fox creek joins the Puyallup River at RM 29.5. Fox is primarily surveyed for coho in the fall and periodically for steelhead in the spring. Fox creek flows within the Rainier Timber - Kapowsin tree farm (Campbell Group LLC), where roads and timber harvesting have impacted several portions of the stream in the past. The lower 1 mile of the creek has the most suitable habitat for adult spawners. Above RM 0.5, Fox is a moderate gradient step-pool stream with good pool frequency and adequate conifer and hardwood riparian cover. From RM 0.5 to 0.3 the gradient decreases and the channel assumes a pool-riffle character with excellent spawning gravels. This middle reach often has the highest spawning densities. From 0.3 to the confluence with the Puyallup, the stream meanders through a grassy area with little riparian cover and moderate amounts of fine material obscuring the gravelly substrate. A four to six foot high beaver dam located approximately 40 yards above the mouth of Fox creek has held up fish passage for the past few seasons. A section of the dam is removed during each survey season to allow coho access to the spawning habitat above. There are few mature conifers in this reach, although many young Grand firs have been planted as a restoration effort. Coho are the most common salmonid found in Fox and likely ascend as far up as the Kapowsin tree farm's 6 Rd. Occasionally, chum and steelhead are observed in the creek as well.

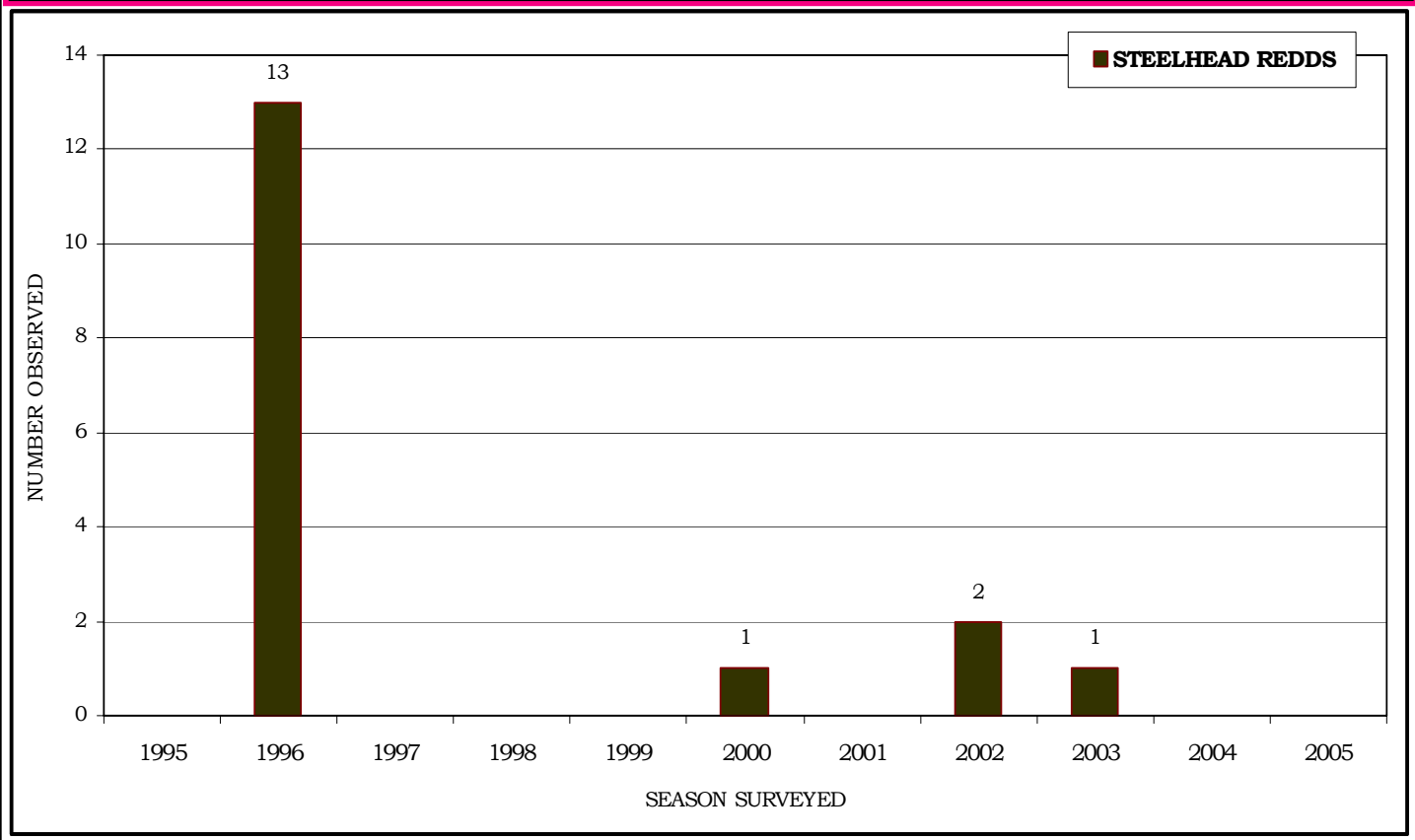
# 2004 FOX CREEK COHO COUNTS




# FOX CREEK COHO SEASON COMPARISONS (1995 - 2004)

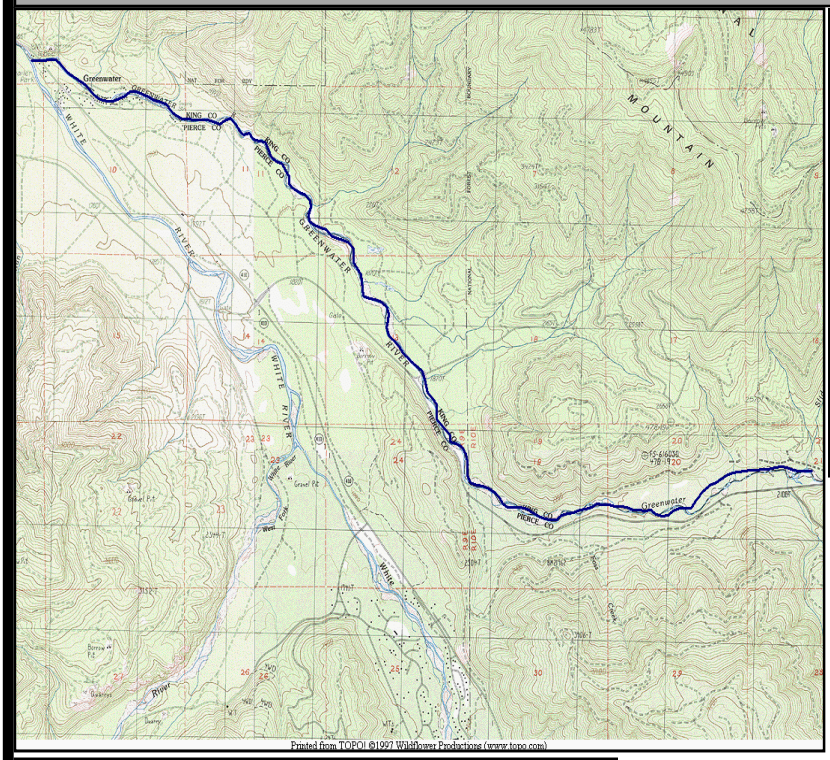


# FOX CREEK STEELHEAD SEASON COMPARISONS (1995 - 2005)



# GREENWATER RIVER

**WRIA: 10.0122 - WHITE RIVER** **2004 - 2005**




**Greenwater River looking upstream from RM 6.**

**River miles surveyed:** 0.0 to 11.3
**Dates surveyed:** 8/20/04 to 6/9/05
**Species surveyed:** Chinook, Steelhead

**Access**

**R.M. 0.0:** Hwy 410 crosses the Greenwater just above its mouth at the Town of Greenwater.

**R.M. 1.7:** Approximately 1 mile upstream, a spur to the right leads to a bridge over the creek. Many upstream access points are available from the Forest Service 70 rd which follows it most of its length.

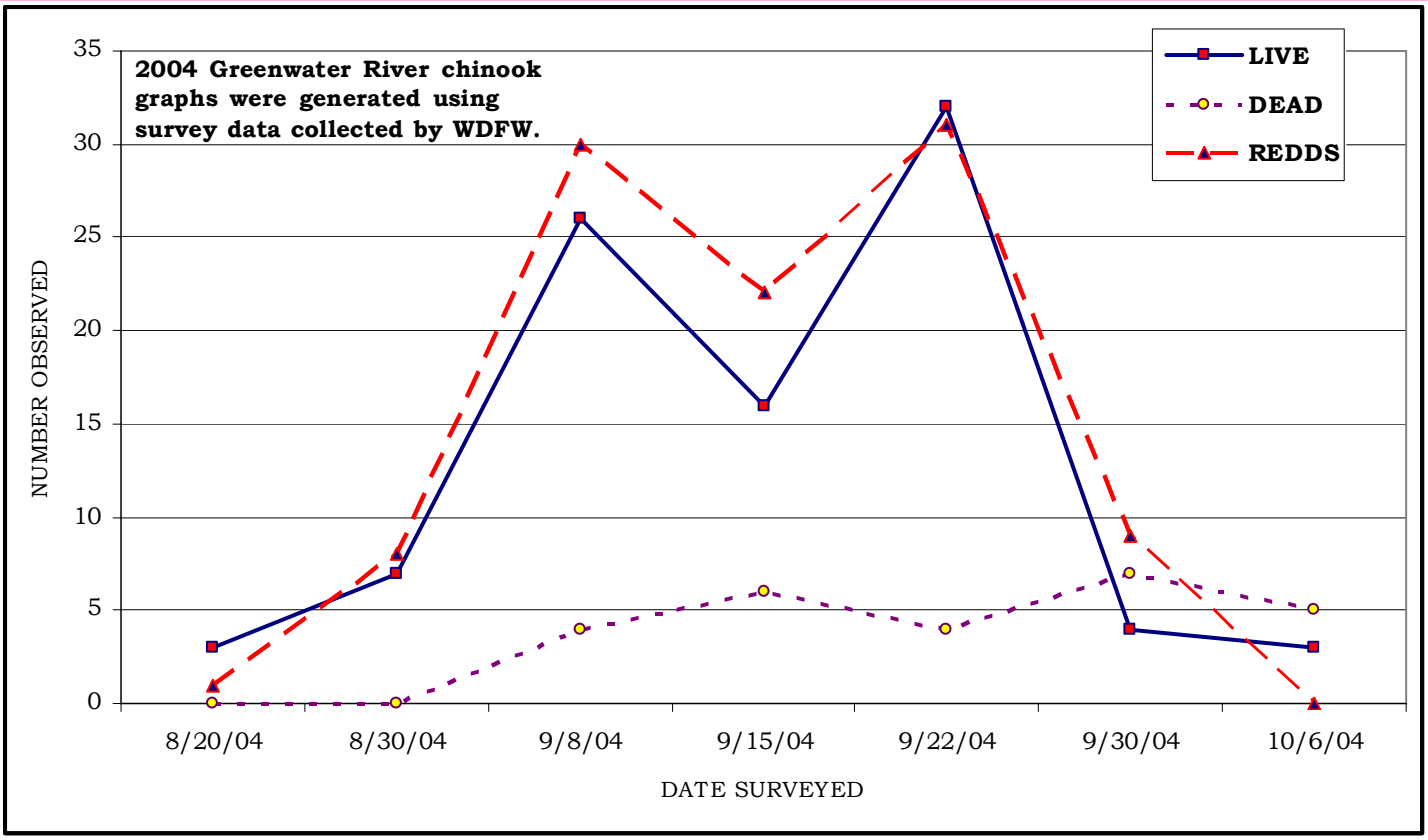
## DESCRIPTION

The Greenwater River is a right bank tributary to the upper mainstem White River. The Greenwater originates on Castle Mountain and meets the White river near the town of Greenwater at RM 46. It supports large runs of steelhead, chinook and coho salmon. It is surveyed for both Chinook and steelhead by the Washington Department of Fish and Wildlife, but not for coho. The Greenwater river is one of 7 index streams in the Puyallup watershed that are surveyed by WDFW. The Greenwater is a medium sized, low gradient pool-riffle stream with abundant high quality spawning gravel. Much of it flows through Forest service land and the riparian zone is primarily second growth conifer and hardwoods. Only limited amounts of LWD exist in the channel, and the average size reflects the surrounding forest and is small. What large wood exists is usually quite old. Significant tributaries to the Greenwater include Pyramid, Lost, Maggie, Slide and Twenty-eight Mile creeks.

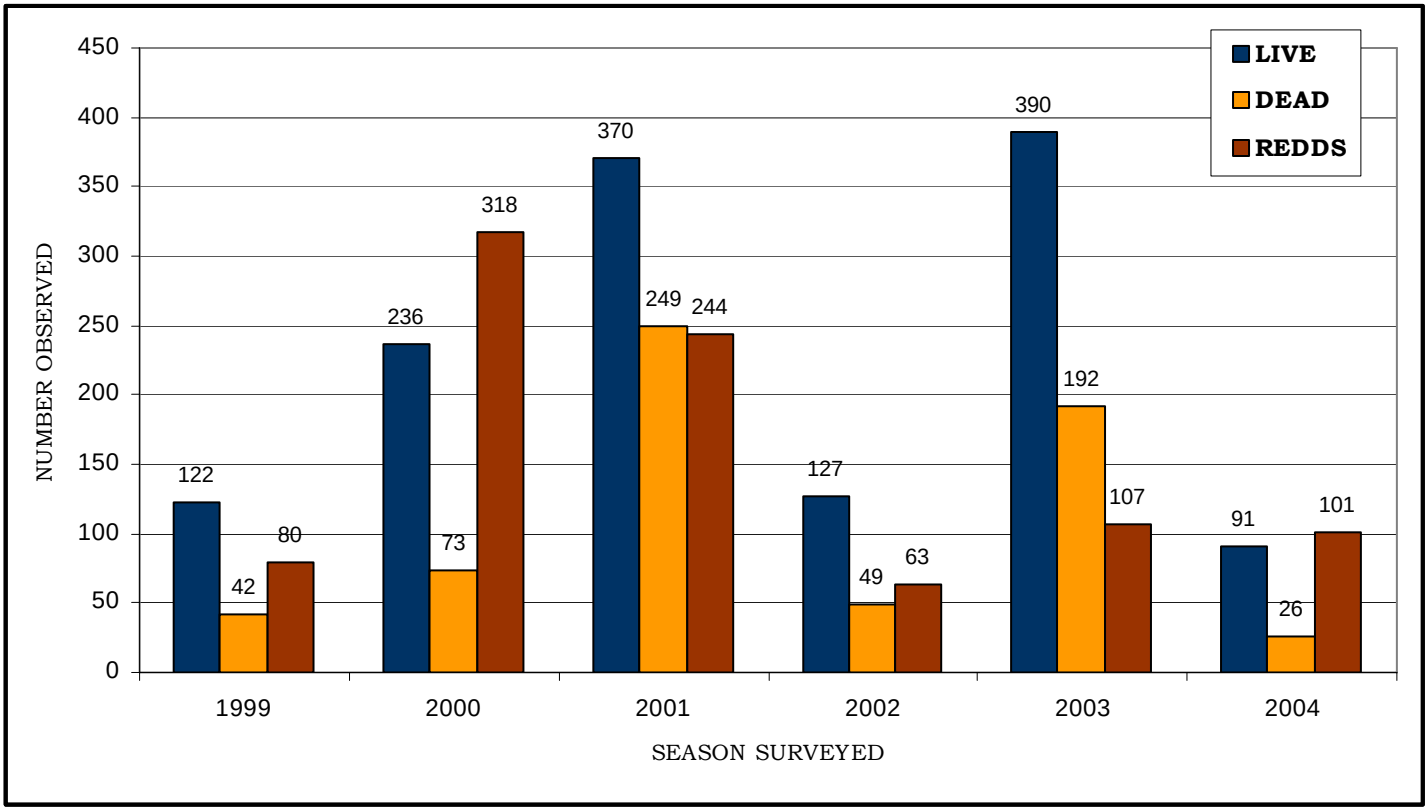
As with all upper White River surveys, adult salmon and steelhead that spawn in the Greenwater river were captured at the USACE fish trap in Buckley (see pg.5), and transported above Mud Mountain dam. Since precise escapement numbers for the upper White River drainage are known, surveys are conducted to determine fish distribution and spawning success. The upper White Rivers' coho escapement is derived from counts made at the Army Corps of Engineers' Buckley trap.

**Greenwater River looking upstream at RM 10.**

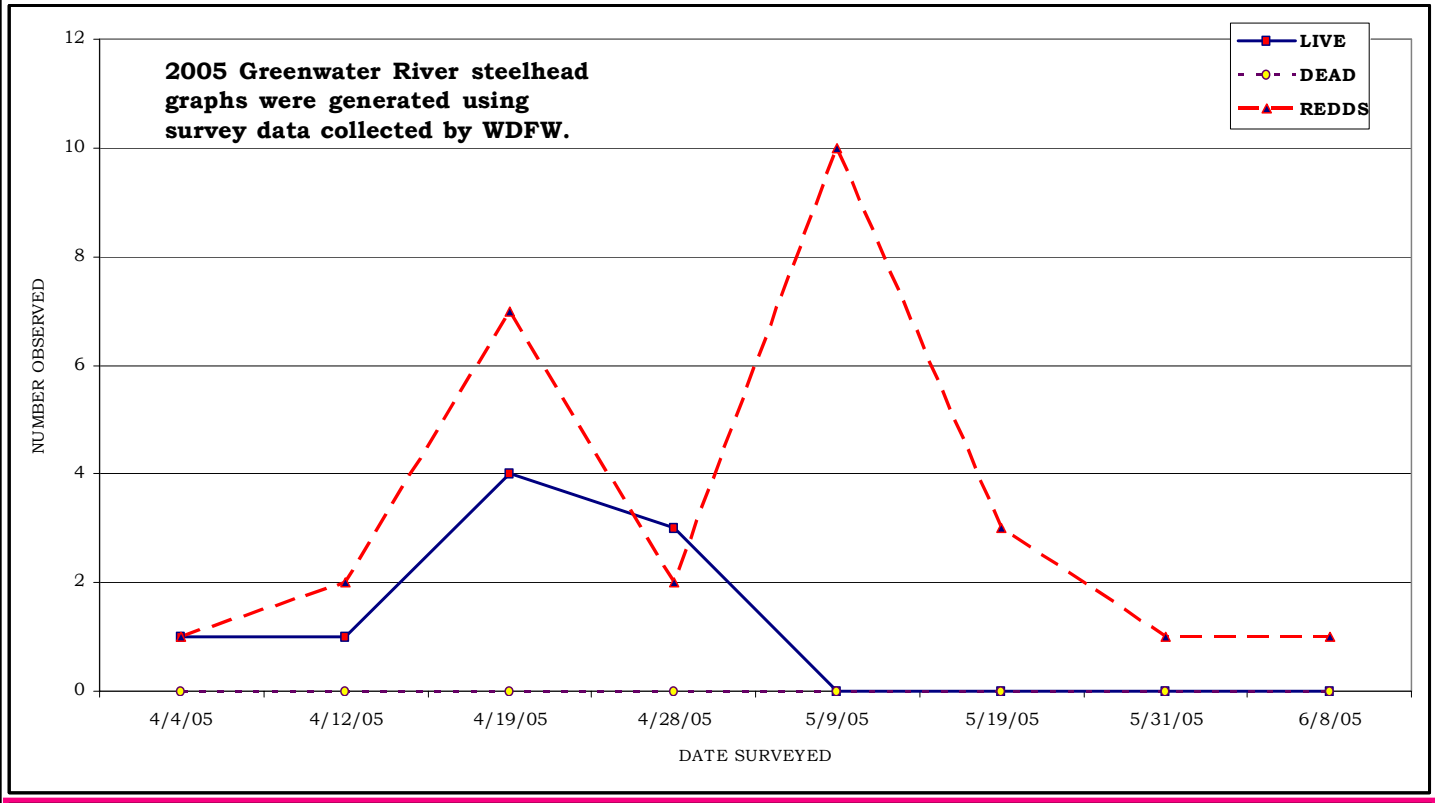
# 2004 GREENWATER RIVER CHINOOK COUNTS



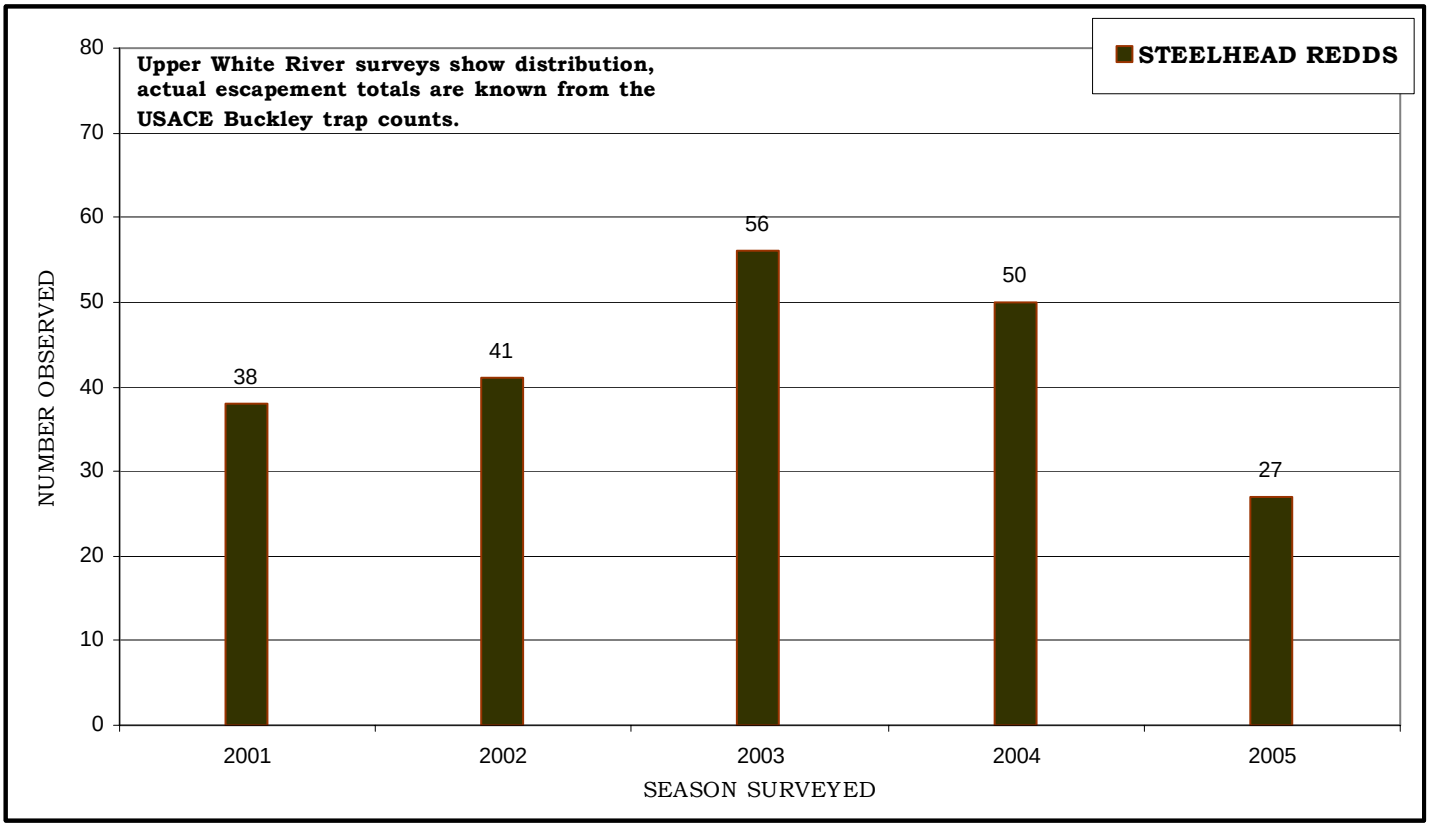

# GREENWATER RIVER CHINOOK SEASON COMPARISONS (1999 - 2004)



# 2005 GREENWATER RIVER STEELHEAD COUNTS




# GREENWATER RIVER STEELHEAD REDDS SEASON COMPARISONS (2001 - 2005)



# 2004 GREENWATER RIVER TEMPERATURE

## MEASURED AT THE HWY. 410 BRIDGE